Review of the Sanitary Epidemiological Services in the Kyrgyz Republic

Report on an Interagency Mission to the Kyrgyz Republic

Kyrgyzstan
21 September–6 October 2000

2001

Interagency Mission Report

21 September–6 October 2000

Ministry of Health, the Kyrgyz Republic
WHO Regional Office for Europe
World Bank
The USAID-funded Abt Associates ZdravPlus Program
Department for International Development

Members of the review team

Gulin Gedik*
Spencer Hagard
Matti Karuvaara
Simo Kokko*
Joseph Kutzin
Daniel Miller
Jukka Suni
Irina Stirbu

* Editors of the report

ABSTRACT

In Kyrgyzstan, as in all former Soviet Union countries, a vertically organized sanitary epidemiological service (SES) is responsible for providing part of the services related to the health protection. Though SES acquired a relatively strong position during the existence of the Soviet Union, currently SES faces serious financial problems of trying to make ends meet with a low level of spending – about US$0.30 per capita in Kyrgyzstan at the end of the 1990s. Reforming the SES has lagged behind the development of other components of the health care system in the country. It became evident that, in spite of some plans to restructure the SES, the strategic vision of the reform still remained as a future challenge. Therefore, a review team was designated to include experts relevant to the three main functions of SES – epidemiology, sanitary hygiene and laboratory services. The review covered how the SES operates and how it is structured, assessment of the existing functions and structures and the recommendations on how to revise and restructure SES. The ultimate purpose was to make the SES even more effective and efficient, keeping in mind the scarcity of financial and other resources.

Keywords

EVALUATION STUDIES
EPIDEMIOLOGY – organization and administration
HEALTH SERVICES
PUBLIC HEALTH ADMINISTRATION
SANITATION
PREVENTIVE HEALTH SERVICES
KYRGYZSTAN

Gulin Gedik (ggedik@bss-uhs.com)
Spencer Hagard (Spencer.Hagard@lshtm.ac.uk)
Matti Karuvaara (Matti.Karuvaara@pp.inet.fi)
Simo Kokko (Simo.Kokko@stakes.fi)
Joseph Kutzin(kutzin@elcat.kg)
Daniel Miller (dmiller2@worldbank.org)
Jukka Suni (Jukka.Suni@hus.fi)
Irina Stirbu (irst@hotmail.com)

This document was text processed in Health Documentation Services
WHO Regional Office for Europe, Copenhagen

CONTENTS

Page

Executive summary

The main organization responsible for health protection in the Kyrgyz Republic is the system of Sanitary Epidemiological Services (SES), which consists of an extensive network of SES offices on the national, regional (oblast) and local (rayon) levels. Additionally, there exist special purpose SES facilities for the needs of the Ministry of Defense, the Ministry of National Security, and the President of the Republic. Many organizations and private enterprises have their own SES facilities.

On the national level SES is led by the Chief State Sanitary Physician, who is a deputy minister in the Ministry of Health. The central administration of SES is called the Department of State Sanitary Epidemiological Services (DSSES), which is led by its director.

Under the umbrella of SES, there are some national level special centres and institutions which include the Research Institute of Medical Prophylaxis and Ecology, AIDS Centre, Anti-Plague Centre, Republican Immunoprophlaxis Centre, and the National Health Centre. Except for the last one, all these institutions have analytical work, laboratory services and some training functions.

The functions of SES can be mainly summarized in three groups, as: epidemiology, sanitary hygiene and laboratory services.

The epidemiology function is based on a wide range of activities, which are typically launched by detection of selected human infections. Thus, this connotation of epidemiology covers the registration and reporting of a wide range of infections, the search for the cause(s) of the occurrence of a single infection, the identification of possible sources of the infection, and possible additional “victims” (from contact with the patient detected), together with predefined sets of actions to bring contacts to be examined. Additionally this includes the so-called disinfection functions.

The sanitary hygiene function covers communal/municipal hygiene, food hygiene, occupational hygiene and school hygiene. As detailed below, the range of activities varies in these different subcomponents, but there is obviously an inspection/controlling responsibility in them all, in order to ensure the safety and security of health aspects.

The network of laboratories is extensive. The total number of SES laboratories in the country is 54. Each of the three levels of SES has its own laboratories. Each SES laboratory has a bacteriology laboratory and a sanitary hygiene laboratory. Virology laboratories are placed only on the national and oblast level and also in the SES of the City of Bishkek. Laboratories of special pathogens may have specific equipment or skills for certain analyses and/or microbes, or they may act as reference or “control” laboratories. “Control” often means that the laboratory above gives advice and supervision to those below. The oblast and national level laboratories also have a training function. The clinical health services have often been using the services of SES laboratories because the skills and equipment on the SES side have been better.

The SES is a way of organizing health protection quite differently from many other countries. SES acquired a relatively strong position during the existence of the Soviet Union. Currently SES faces serious financial problems of trying to make ends meet with a low level of spending –

about US $0.30 per capita in Kyrgyzstan at the end of 1990s. Reforming the SES has lagged behind the development of other components of the health care system in the country. It is also evident that in spite of some plans to restructure the SES the strategic vision of the reform still remains as a future challenge.

Findings and recommendations

Health protection is an essential and fundamental part of every country's health system. SES with its extensive infrastructure covering the whole country is an asset for the country and can play an important role in public health, especially in health protection. Thus, there is no intention to dismantle SES but the main objective is to strengthen it.

The SES structure has been organized according to historical epidemiological problems and practices and has shown significant achievements. However, SES has been less successful in updating its structure, functions and practices in keeping with the changing epidemiological situation, evidence-based new practices, and the changes in the health care system. Thus, there is room and potential to improve and strengthen SES.

Main directions

SES need prioritizing and efficiency gains

As with the whole of the health sector, the SES suffers from under-financing. Declining resources have been an obstacle for SES to maintain their functions fully. Approximately 80% of the existing budget has been consumed by personnel costs and there have been almost no funds for investment and consumables. Under these conditions, it is essential for SES to prioritize its functions and activities. The emphasis needs to be on the activities related to priority problems. The time spent for activities which should be considered as lower priorities should be reduced. There are many possibilities, such as reducing the current involvement in the daily work of the schools, and of avoiding duplications with other institutions.

Updated evidence-based practices

It is important that SES learns about new international knowledge and methods and applies them. SES has some practices which are not followed in many other countries because they are considered ineffective or have been replaced by new interventions, such as tracking fleas for plague, and certain disinfection practices. Therefore, it is important for SES to review all its main practices, and to discontinue or reduce the use of its resources for practices which are not in line with internationally known, evidence-based, most effective practices. This calls for a major review of the work currently carried out under the heading of epidemiology.

It is also essential to introduce mechanisms to disseminate knowledge and methods of evidence-based, most effective practices within the SES network. Updating practices will also lead to efficiency gains and better use of personnel.

Steering of SES and health promotion – from strict regulation to flexibility

The primary function of SES appears to be to "control" many sectors of society, i.e. scrutinize and critique the work of others and then penalize them when the work does not conform to a rigid set of procedures and practices that have been formulated and imposed from the national level in the form of "prekazes" (regulations/directives). It should also be noted that most of these prekazes have been developed quite a time ago. Though this function is important for certain

aspects, such as food safety and avoiding environmental hazards, it is necessary to change the philosophy of the SES towards steering it in a more flexible way.

SES and clinical health services – from controlling to partnership

The relationship between SES and other health facilities has also been based on the controlling role, including control over clinical practice in some cases. The relationship between primary health care (PHC) and SES needs to move from controlling to partnership in health protection, with well defined responsibilities. It is essential to develop mechanisms to work as peers. There is a potential for them to develop joint plans, rather than providing regulations, and to jointly implement these plans. SES has opportunities and skills for overall monitoring, and PHC has the advantage of being close to the population. A mechanism to benefit from these advantages will be useful, as has already been achieved in the area of sexually transmitted infections (STIs), and started in immunization.

Reform implications

The above-mentioned directions will have impact on the overall functions, legislation, infrastructure, human resources and information system.

Functions

Amendments in the responsibilities for health protection, both those of different sectors and of various parts of the health sector, will bring about some changes to the functions of the SES. The main functions will probably be maintained in epidemiology, sanitary hygiene and laboratory services. However, some of the existing sub-functions might be transferred to other sectors or to other facilities, such as transferring some clinical check-up functions to primary care facilities, abandoning the function of controlling clinical practice, transferring some school health functions, and transferring non health related food control functions (such as the amount of ingredients used).

Legislation

There will be a need to revise the legislation in accordance with the changes in philosophy and updated practice. Furthermore, the nature of some legislative documents could be changed to more flexible guidelines.

Human resources

Human resources will require interventions in terms of quantity, skill mix and training. The human resources for SES are characterized by high numbers, employing about 3500 people. The functions of the SES can easily be achieved with fewer staff and when the practices are updated, the workload can be expected to be even lower. The overstaffing is most apparent in epidemiology services and the reduction can thus be started with epidemiology services.

The staff is very specialized in narrow fields, resulting in the need to employ excess numbers of staff even at the local level. More generalist staff could instead be employed at the field level covering a wide range of activities.

The interventions in training will have two aspects: (1) adaptation to changing policies and system; (2) updating of the content of the training. Current training especially needs updating in the area of epidemiology; the current course content presents epidemiological analysis methods that are limited to mostly basic descriptive statistics. There is a need to extend to internationally

standard epidemiological methods (such as case-control analyses, cohort analyses, and data modelling).

Infrastructure

The current infrastructure needs to be reviewed at both the national level and the local structures. The national level is characterized by the fragmentation of a number of facilities. It is possible to rationalize these facilities. The DSSES can be responsible for policy development and the operational management of the system, while another republican level facility supports the Department with analytical capacity and the reference laboratory services. However, it is recommended that the AIDS Centre is maintained.

The oblast and rayon level structure can be preserved with some amendments. At the oblast level, the fragmented branches of some republican centres need to be merged under the oblast SES. The skill mix at the oblast and rayon level will need to be adapted to the changing functions and towards less specialized staff who can be flexible in covering the work.

In terms of both functions and infrastructure, laboratory services are envisaged to go through a change. Certain laboratory functions at the national level are unclear and duplicate. Without trying to present a truncated structure where all excess capacity and duplication would be stripped away, the best way to proceed would be to organize all the present national level laboratories under one organizational umbrella. In doing this, all functions, all equipment and also all the special skills of the staff would have to be carefully recorded and assessed, and the aim should be a new design which is as structurally efficient as possible. There is the potential to merge laboratories and have one national level and reference laboratory each for bacteriology and virology. Additionally it is possible to have one laboratory for special pathogens instead of having separate ones for each pathogen.

At local level, the interface between the SES laboratories and clinical laboratories (usually situated in the hospitals) is problematic. In 44 instances the clinical services use SES laboratories and in 14 instances SES uses hospital laboratories. For the rest, both sides have their own laboratories. There are also some instances where the oblast central hospitals do not have their own clinical microbiological laboratories. Looking at the wider picture, it should be clear that the needs of the clinical services should in any case be the first priority in infection diagnostics. The investigations made to support SES activities are about checking samples of contact persons, about ruling out infections. On any longer term perspective, the right place for human infection microbiology should be in the realm of clinical services. Sanitary hygiene laboratories have their own special fields in the chemical and physical analyses, which are not linked directly to human infections. Future consolidation plans would have to proceed on a rayon by rayon and oblast by oblast basis. The investments should be planned accordingly.

It is planned to locate two main virology laboratories in Bishkek and Osh.

Information system

The present SES system of data collection and emergency notification of infectious diseases appears to be one of the stronger activities of SES. The annual statistics appear to be carefully collected and annual reports prepared. It is widely acknowledged that there is under-reporting of information about infectious diseases with real public health significance. SES also collects and reports other information, some of which is much less useful or relevant to public health and therefore further review and rationalization might be needed.

According to the national strategy of health information development, the Medical Information Centre (MIC) is developing a comprehensive system for extracting information from clinical services. This information will include core data about infectious disease. The service should be in operation in 2–4 years from now. It will produce aggregated data on the infections with a reasonable lag of about 1–2 months. Building a separate computerized information system for SES to monitor infectious diseases is not advisable. Planning should be undertaken to integrate SES data collection needs into the computer system of MIC. The SES should build capacity and expertise at the oblast level to analyse data derived from the future MIC data, from both clinical and SES sources, in order to be able to identify and respond to local health problems and needs. In addition, the SES needs to increase capacity and expertise at the republican level to perform more detailed analyses of the data that will be coming from the MIC system.

An interim plan for collection and reporting of rationalized SES information will need to be developed and implemented to cover information needs until the MIC system is fully implemented. Use of simple spreadsheet software with e-mail transmission may be sufficient. Careful attention to the design of the MIC computer system will be very important in order to continue to meet the information needs of the SES at the oblast level in a timely manner. There may be a need for small, SES-specific databases within the MIC computer system for collection and collation of information not available or not collected from clinical services but that are important to enable the SES to continue to perform its public health functions. For example, information derived exclusively from clinics and hospitals reflect the problems of those who seek out and receive clinical services. But, information derived exclusively from users of clinical services may not accurately reflect the full epidemiological picture of an infectious disease in the population as a whole.

1. Preface – the purpose of the review

The Kyrgyz Republic is a newly independent Central Asian country undergoing economic transition and hardships due to the economic changes following the dissolution of the Soviet Union. It has been a pioneer in many fields of reforming its health systems during the 1990s. Its Ministry of Health followed a systematic approach to reforming health care and developed a master plan in 1994–1996 through the MANAS Health Care Reform programme, assisted by the WHO Regional Office for Europe (WHO/EURO) and supported by many other international and bilateral agencies. During the implementation process, the Kyrgyz Republic Health Sector Reform Project, funded by a World Bank (IDA) credit in 1995–2000, together with many collaborative activities between Kyrgyzstan and WHO, and several international and bilateral development programmes, have all contributed to changes.

Unfortunately, the overall health status of the population declined in the early years of the transition. The improvements in recent years have not led to the desired level of health. In fact, the epidemiological transition towards chronic noncommunicable diseases has increased the burden of diseases in the Kyrgyz Republic, as in almost all the countries of the former Soviet Union. Increases in the occurrence of some important infectious diseases in the country have raised concerns. The concerns have highlighted the need to look at the public health system further and the need to invest in this area. Therefore it has been agreed that the forthcoming Health II project would include investments in the full range of public health, both health protection and health promotion. For the purposes of this project and this review, these two concepts are operationally defined as follows.

Health protection is a set of preventive activities, which range from legislative measures to concrete inspections of safety of living or working environments, food, water and similar. The underlying idea in health protection is that the hazard to human health comes from the outside in the form of microbes, or through exposure to harmful chemical or physical agents. Prevention of accidents is often included in health protection, especially when the focus is in making environments, roads and workplaces safe.

Health promotion is a wide concept encompassing as a matter of fact the whole realm of public health. The concept of health promotion, as defined in the Ottawa Charter (1986), is the process of enabling people – both individually and in communities – to understand the determinants of their health and to take control over them. It is thus a wide concept, differing significantly from health protection in being centred in the self-determination of the citizens. It therefore demands from its practitioners specific knowledge and skills: to enable individuals and communities to live more healthily, to advocate policies which promote health and against policies which threaten health, and to mediate among competing interests where health is at stake within communities. Health promotion is built on the acknowledgement of people as independent subjects, who make choices about their behaviour and who try to exercise control over the determinants of their health. Health promotion therefore recognizes the importance of the social environment for health. Families, communities, workplaces and even cultures have their impact on health, both in the positive or negative sense. Health promotion must not be equated with “propaganda” through mass media as happens in some countries, although mass communication is one method used in health promotion.

Health protection is composed of a variety of actions, many of which also spread outside the health sector itself. In the Kyrgyz Republic the main instrument for health protection is a

countrywide organization called the Sanitary-Epidemiological Services (SES) within the structure of the Ministry of Health.

The SES is a way of organizing health protection quite differently from many other countries. SES acquired a relatively strong position during the existence of the Soviet Union. Currently SES faces serious financial problems of trying to make the ends meet with a low level of spending – about US $0.30 per capita in Kyrgyzstan at the end of the 1990s. Reforming the SES has lagged behind the development of other components of the health care system in the country. During the preparation process of the Kyrgyzstan II health project and the WHO mission in the spring of 2000 it became evident that, in spite of some plans to restructure the SES, the strategic vision of the reform still remained as a future challenge.

SES reform plans have hitherto mainly addressed modernization of equipment and structural changes in the service network, but there have been differences of opinions about the need to revise the basic functions of the SES. There are no examples or experiences of comprehensive reform from other countries of the former Soviet Union with the same tradition of SES, which provides another challenge.

It was against this background that the plan for organizing a collaborative mission to review the Kyrgyz SES system and its linkages to other related services and sectors arose, in order to assist the Ministry of Health with this major reform challenge. The plan was negotiated with the Kyrgyz Ministry of Health, which welcomed the idea. Thus the review became a collaborative project between the WHO, World Bank, USAID, DFID and the Ministry.

The review team was designated to include experts relevant to the three main functions of SES – epidemiology, sanitary hygiene and laboratory services. Its first purpose was to learn how the SES operates and how it is structured. Then – it would assess the existing functions and structures and make recommendations on how to revise and restructure SES. The ultimate purpose was to make the SES even more effective and efficient, keeping in mind the scarcity of financial and other resources. Thus this report focuses on health protection and mainly on the review of the SES.

2. The review team and mission arrangements

The review was jointly organized by the World Bank, the WHO Regional Office for Europe, DFID and the USAID-funded Abt Associates ZdravPlus Program (hereafter referred to as ZdravPlus). It was jointly led by Simo Kokko, World Bank senior health specialist, and Gulin Gedik, WHO/EURO.

The members were:

Matti Karuvaara, environmental health inspector from the Social and Health department of the Provincial administration in Eastern Finland; representing expertise of health inspections and health surveillance,

Joseph Kutzin, health economist, WHO/EURO; representing health financing expertise.

Daniel Miller, public health and Family Medicine specialist seconded from the Centers for Disease Control to the World Bank; representing infectious disease and epidemiology expertise.

Jukka Suni, medical specialist in laboratory investigations and infectious diseases, chief laboratory physician from the Helsinki University Hospital in Finland; representing expertise in laboratory investigations and laboratory services arrangements.

Irina Stirbu, public health specialist from the Zdravplus; responsible for the extensive preparations prior to the team's mission.

Spencer Hagard, public health specialist from the London School of Hygiene and Tropical Medicine, consultant for DFID, had been involved in the preparation of the Kyrgyz Health II project and also of the review mission. He was unable to join the mission but he contributed to its preparation, and also to the report, based on his expertise and prior wide knowledge of the Kyrgyz health sector.

The team's work took place between 21September and 8 October 2000. During this time the team or its members visited 31 different institutions and organized seven discussion groups on selected themes using the approach of focus group discussion to gather information and views from the participants

The team extends its warm thanks to all the individuals and organizations for their help and hospitality during the work of the team.

3. Methods used for information gathering

All the international organizations participating in the review have become familiar with the Kyrgyz health sector and SES earlier in many ways.

The World Bank has had its first health project in the Kyrgyz Republic in 1995–2000. That project did not have health protection or public health as a component, but some of the project activities dealt with infectious diseases. The preparation of the second health project has been going on since July 1999. Public health, and therefore health protection and SES issues, have been on the agenda from the beginning. A technical working group of the Ministry of Health was established. The group, together with the representatives of the Department of State Sanitary Epidemiological Services (DSSES) of the Ministry of Health have been preparing their reform and investment programme for the forthcoming project. The members of the World Bank team, Simo Kokko and Spencer Hagard (also representing DFID, which has contributed to Kyrgyz health sector reform thinking and development since 1995), have familiarized themselves with the basic functions of SES and with the reform and investment proposals. They have also visited several SES organizations and interviewed members of key organizations. A special workshop was organized in April 2000 to discuss the proposals for the project. This workshop had a large audience of all SES directors of the country, since it coincided with a nationwide training course, which the directors were taking. Since February 2000 Asylbek Sydykanov, sanitary physician from the DSSES, has been employed as a local consultant for the preparation of the project.

WHO/EURO has a long history of country assistance and cooperation and working with the Ministry of Health on health system development (including all components of the health system) since 1994. In April 2000, WHO/EURO organized a mission to review selected sectors of the Kyrgyz health sector. Public health was one of the sectors covered. Earlier, Gulin Gedik worked as a resident in the Kyrgyz Republic for two years and continues to work on the health care reforms in the Kyrgyz Republic and other central Asian republics. Thus she is familiar with the SES services and the developments in the health care system.

The USAID-funded Abt Associates ZdravReform Program contributed to the development of the Kyrgyz health reform model from 1995–2000, dealing mainly with the restructuring of the clinical health services and their funding. In June 2000, Abt Associates initiated a new health systems development project in the five countries of central Asia, the USAID-funded ZdravPlus Program. The scope of this project includes providing technical assistance to enhance the functioning of the SES in the central Asian countries.

In the summer of 2000, during the June missions of the World Bank and WHO, ZdravPlus agreed to make available the work input of Irina Stirbu, M.D, MPH for preparation for the review mission. She worked in Bishkek from the end of June until the end of September, thus working as a member of the review team for the first week of the review. She collected a wide range of information on SES services, including related legal and regulatory documents, statistics and descriptions of the structures and functions of all SES organizations. She visited several SES sites around the country, and through all this she acquired valuable information and insight into the complex structures and functions of SES. Her contribution to the review was submitted to the review team members as background material. This material has been incorporated into this report.

As well as the team or its members visiting 31 different institutions, and organizing seven discussion groups for gathering information during the mission, the team reviewed various statistics collected by SES and inventories about the SES and its facilities.

4. Short overview of the Kyrgyz SES services

The main organization responsible for health protection in the Kyrgyz Republic is the system of Sanitary Epidemiological Services (SES). SES, which consists of an extensive network of SES offices on the national, regional (oblast) and local (rayon) levels. Besides the rayon-based SES offices, there exist special purpose SES organizations for the needs of the Ministry of Defense, the Ministry of National Security, the President of the Republic. Many organizations and private enterprises have their own SES organizations. Under the administrative umbrella of SES there are several national special institutions with specific tasks. A graphic presentation of the SES structure is provided in Annex 1.

On the national level SES is led by the Chief State Sanitary Physician, who is a deputy minister in the Ministry of Health. The central administration of SES is called the Department of State Sanitary Epidemiological Services (DSSES), which is led by its director.

The national level special centres and institutions include the Research Institute of Medical Prophylaxis and Ecology, AIDS Centre, Anti-Plague Centre, Republican Immunoprophlaxis Centre, and the National Health Centre. Except for the last one, all these institutions have analytical work, laboratory services and some training functions. The details of these institutions are given in section 6.

National Health Centre. This centre has long been established for “health enlightenment and health propaganda”. In keeping with the common pattern, this centre also has oblast level units. The centre has focused mainly on communication through mass media, through distribution of information in the form of books, booklets, posters, etc. There is currently a plan to convert this centre into a “National Health Promotion Centre”, which would be an independent centre under the Ministry of Health, not under SES. For this reason, and because the basic function of this

centre has not been in the field of health protection, this centre was left outside the scope of the SES review.

General country-wide network of SES organizations

Each SES organization on all the three levels (national, oblast and rayon) is composed of the following internal departments, which have the following divisions:

1. Sanitary department, which includes the following divisions (the names have been adapted to commonly used equivalents in English)
   - Industrial hygiene
   - Hygiene of children and teenagers
   - Hygiene of food and nutrition
   - Community hygiene (water, sewage, waste, etc.)
   - Radiation control department
2. Epidemiological department
   - Parasitology division
   - Division of extremely dangerous infectious diseases
   - TB department
   - Department of immunoprophylaxis
3. Department of disinfection
4. Laboratory

A somewhat similar set of lists can be presented of the functions:

There are three main functional areas of SES work.

1. Sanitary hygiene, which includes:
   - Industrial hygiene
   - Radiation control
   - Hygiene of children and teenagers
   - Food and nutrition hygiene
   - Municipal hygiene
2. Epidemiology
   - Control of general infectious diseases
   - Control of TB
   - Control of vaccine preventable diseases
   - Control of extremely dangerous infections
3. All areas are supported by the network of laboratories
   - Bacteriology laboratory
   - Sanitary Hygiene laboratory
   - Virology laboratory

The justification for having the same structures and functions on all three levels is given as (1) hierarchical division of tasks (the upper levels do the most analytical parts of the work) and by (2) the controlling function (rayon level activity is controlled by the oblast level and the oblast level is controlled by the national level).

Instead of attempting to give a detailed account of the structures and functions of SES, section 5 will give an evaluative account of the features deemed to deserve special attention.

Laboratories of the SES. The network of laboratories is extensive. The total number of SES laboratories in the country is 54. Each of the three levels of SES has its own laboratories. Similar to the general architecture of SES, the laboratories are also hierarchically organized and specialized. Laboratories of special status may have specific equipment or skills for certain analyses or microbes, or they may act as reference or "control" laboratories. Control often means that the laboratory above gives advice and supervision to those below. The oblast and national level laboratories also have a training function.

Each SES laboratory has a bacteriology laboratory and a sanitary hygiene laboratory. Virology laboratories are placed only on the national and oblast level and also in the SES of the City of Bishkek. The laboratories have traditionally represented the highest level of development in the health sector in Kyrgyzstan. Therefore, the laboratories of the clinical health services are often using SES laboratories' services because the skills and equipment on the SES side have been better. The issues of rationale, of structural efficiency, and also of the division of tasks between SES laboratories and laboratories outside the health sector, are dealt with in section 5.

Personnel

The whole SES employs about 3500 people. However, there are 4834 positions for staff. This number is derived from a formula, which calculates the needed numbers per population.

Out of the 3500 about 770 are sanitary physicians by training, 1730 are nurses and physicians' assistants.

Even on the rayon level, the staff are allocated to their own special sectors and subdivisions of work. Thus, in the field of epidemiology there are often separate specialists overseeing and responding for: vaccination; extremely dangerous infections; airborne infections; TB; parasitology, etc. The same is the case in sanitary hygiene – separate workers for work hygiene, children's and teenager's hygiene, food hygiene, and municipal hygiene. Such narrow specialization means that even the smallest SES needs to have at least 7–8 physicians (to cover each area of work) and about 15 assistants.

Currently there are about 2.5 assistants per physician on the rayon level and 3.2 on the oblast level.

Sanitary physicians are trained in the Kyrgyz Medical Academy in a separate faculty, previously the "sanitary faculty", but after a recent change of name the "preventive faculty". Physicians' assistants are trained in medical colleges together with other intermediary health staff.

Financing of SES

SES services are funded from two sources. Three quarters of the total funding comes from the public budgets on the national and local level. One quarter is collected as fees, for services to enterprises and organizations.

The overall level of SES funding is very low, about US $0.30 per capita for the whole country in 1999. This amounts to about 5–7% of the public spending of the health sector. A disproportionately high amount (over 80%) goes to staff salaries and other employment costs. This leaves very little money for running the operations, utilities, transport and consumables.

Collection of fees is an essential way for many SES units to keep their operations going.

5. Functions of the basic SES network

As mentioned earlier, the functions of the SES are summarized in three main groups as epidemiology, sanitary hygiene and laboratory services.

5.1 Epidemiology

Definitions and connotations of epidemiology

The term "epidemiology" has a special connotation, which differs from that in common professional use, at least in English-speaking countries. To clarify this difference, the two connotations could be summarized as follows.

In the international terminology, epidemiology is an academic and professional discipline. In the academic world it is (according to a frequently used concise definition) ***the study of the occurrence of diseases and other health-related phenomena and of their determinants.*** In most countries, epidemiologists are theoretical professionals, whilst different public health professionals, and also clinicians, health planners, etc. apply epidemiological knowledge in their work. Epidemiology and its applications to health policy, prevention, health promotion, interventions etc. are central to the work of public health professionals, but are not their only source of information. Epidemiology is mainly an activity on the level of populations, although its applications can be encountered on the level of individuals and families - for example when investigating outbreaks of infections or other unexplainable occurrences. The typical methods and tools of epidemiology are population studies, clinical studies and health statistics.

In the terminology in use in Kyrgyzstan and other CIS countries with similar SES systems, epidemiology is about a wide range of activities, which are typically launched by detection of selected human infections. Thus, this connotation of epidemiology covers the registration and reporting of a wide range of infections, the search for the cause(s) of the occurrence of a single case of infection (the index case), the identification of possible sources of the infection, its possible "victims" (from among contacts of the index case), and predefined sets of actions to bring these contacts to be examined. Also under epidemiology are the processes of certain protective actions, such as sending some patients to hospitals, banning patients or contacts from going to school or to work, and in extreme cases the use of quarantine as well.

Launch of epidemiological action by "emergency notifications"

On the local SES level, epidemiological actions are launched by the receipt of "emergency notifications", which usually come from the clinical health services. When a clinical physician suspects that a patient's diagnosis could be an infectious disease, he/she should complete a special form called "Emergency notification of a case of infectious disease, food poisoning, acute occupational poisoning or an unusual reaction to vaccine". As the name reveals, the same form is used for poisonings and unusual vaccine reactions.

The form contains detailed information about the patient, about his/her workplace or school, and the clinical actions taken, and also about the "anti-epidemic measures" taken. The form should be sent to the local SES within 12 hours of detecting of an infection. During the work of the review team it became clear that the range of infectious diseases to be reported varied in different accounts on different levels of the SES system. Usually the national authorities said that self-healing common respiratory infections are no longer expected to be reported, and for acute diarrhoeal disease (without reason to suspect involvement of specific dangerous intestinal

pathogens) only weekly statistics would be assembled without launching the anti-epidemic actions of SES.

The anti-epidemic action generally consists of the following steps:

- The SES epidemiologist first gets in touch with the clinician. After making sure that necessary microbiological samples are taken, SES proceeds to conduct its epidemiological investigation of the focus of infection. This is not conducted in cases of simple diarrhoea, tick-borne encephalitis, acute respiratory infection or influenza.
- The possible source of infection is determined by examining the nearest home, school or work environment of the infected patient.
- Persons having had contact with the infected patient are sent for clinical investigations. This is limited to the nearest contacts, for example persons living in the same household
- Notification is made to the workplace. This is needed because, in the case of several categories of infection, persons working in defined occupations are obliged to quit working until full or partial recovery. This is done in order to stop the spread of the infection.
- The (ultimate) focus of infection is disinfected by the disinfection department of SES. This department operates under the epidemiology subdivision.
- Necessary advice and health education about the infection and about precautionary measures is given.

The process described above is central to the epidemiology function of the SES. It employs the epidemiologist, epidemiologist's assistants and other staff needed in the process. In order to assess how much resource is really used for this purpose, and whether that use is justifiable, the true scope of infections, which launch this – by international standards – exceptionally extensive sequence of events, would need to be known. Knowing that SES employs about 250 epidemiology doctors, who each have several assistants, it is clear that the input into this infection-launched activity is large.

There is a clear difference between the Kyrgyz practice and the most common practices in countries outside the SES tradition. With the exception of certain dangerous pathogens or special outbreaks, all these functions are incorporated in the work of the clinical services. The clinical services do not usually make home visits or visits to workplaces. Workplaces may be notified in cases of certain infections, when there is a clear risk of the patient passing on the infection, for example in food production or catering.

The role of SES had been recently redefined in the area of sexually transmitted diseases. Earlier the SES epidemiologists traced the contacts of the patients with these infections. In the case of sexually transmitted diseases the old practices were stigmatizing and must have failed to preserve the necessary confidentiality in many cases. The new practice means that the clinicians are now mainly responsible for tracing the contact persons through the index patient, although SES is still involved to some degree in tuberculosis contact tracing. These examples show that practices can be aligned according to international practice without any detrimental effects.

An essential feature of the actions of the epidemiologist is the detailed control of the doings of the clinical physicians and nurses in relation to infections. Usually this is done through scrutiny of the medical records of the patient. "Prikazes", the binding orders of the government, stipulate in detail, what the clinicians must do. For example, prikazes give the maximum number of days

that the clinician may wait for the self-healing of diarrhoea. They also list the types of infections for which the patient must be hospitalized. Any failures of the clinicians to proceed as stipulated lead to penalties imposed by the SES on the clinicians, usually fines.

Disinfection

Disinfection is actually a vertical organizational and functional structure in SES. All three levels of SES have their special staff for disinfection. Disinfection can be triggered by the occurrence of infectious diseases, or it can be preventive. In the latter case, it is a matter of treating certain spaces or surfaces with disinfecting chemicals. Under the name of preventive disinfection the SES also offers rodent control services for fees to families and enterprises.

The core of infection triggered disinfection is the special treating of the index patient's clothes and bed linens. For this purpose there are mobile and fixed units. Fixed units are often located in the grounds of infectious disease hospitals or hospitals with infectious disease wards. The mobile unit is built on a small truck. In both cases the unit consists of a heating block and a disinfection chamber, where the textiles and other suspicious objects are placed. The agent used is heated para-formaldehyde, a very powerful agent, which reportedly discolours textiles and distorts their structures.

Such extensive practices are not in use in countries outside the SES tradition. This practice with patients with tuberculosis, diphtheria, or typhus is well beyond what is necessary to protect the health of household members or the public. Tuberculosis is transmitted through the air by infected droplets. Good infection control consists of the thorough airing of rooms previously inhabited by TB patients and washing of clothes and bedding in hot water with detergent. Similarly, with typhus, the bedding and clothes of patients can be washed with detergent, bleach, and hot water, and family members should be carefully taught about the thorough washing of hands and other hygienic practices. The forthcoming DFID-funded project on rural hygiene and sanitation, with hygiene promotion as one focus, will offer an opportunity for promoting such teaching.

Intra-hospital Infections

One of the key functions of the SES appears to be control and investigation of intra-hospital infections (IHIs) (also known as hospital acquired infections). Cases of IHI detected by hospital physicians have to be reported via the emergency notification system. All cases of IHI must be investigated and controlled by the SES. Methods utilized by SES staff to investigate the possible sources of IHIs are minimal, with infrequent identification of the exact source/cause of the IHI, and with the usual attribution being the general lack of hygiene of hospital staff. In addition, SES periodically performs environmental assessments in the hospitals, including environmental sampling within the hospital, culturing of staff skin, checking of concentrations of disinfecting solutions, etc.

It is reported that most hospitals have some form of an "IHI control committee" made up of hospital physicians and nurses. The committees are supposed to review procedures and protocols to reduce the incidence of IHIs, although direct questioning elicited no reported activities such as Morbidity and Mortality conferences within the hospital which would provide the opportunity to review and discuss adverse patient outcomes including IHIs. SES staff review and control the work of the committees. There are very few hospitals with staff exclusively dedicated to prevention and control of IHI. When it is performed at all, some of the hospitals do bacteriological confirmation of IHIs in the hospital lab, while other hospitals send the samples to the SES lab.

However, there were no reports of studies of the occurrence of IHIs caused by multiple-resistant bacteria.

Risk factors for IHIs (reported and observed by the review team) include: general poor condition of hospital facilities and equipment; poor or outdated IHI prevention practices by hospital staff; disregard of basic infection control procedures by hospital staff; re-use of high risk supplies e.g. transfusion materials, catheters; and unnecessarily long (and inappropriate) hospitals stays. High rates of hepatitis B imply that iatrogenic causes may play a role.

There does not appear to be a clear case definition for IHI. There is a strong disincentive for physicians or hospitals to detect or report IHIs. The hospital and staff are usually fined for IHIs. The relationships between SES and hospital staff are strained in regard to IHIs. There is a high probability that IHIs go undetected and are grossly underreported.

Penalizing of clinical services is detrimental to the development of the necessarily flexible cooperation and partnership which is needed to appropriately prevent and control the sources and spread of IHIs. In the current system of control and penalties, there is a strong disincentive for clinicians to be alert to, to detect, or to report cases of intra-hospital infections which, if this system continues, could threaten the health of any hospitalized patient. A true partnership approach would take advantage of the expertise of SES staff in detecting and identifying potential causes of intra-hospital infections, as well as of the clinician's knowledge and desires to have the best clinical outcomes for each of their patients.

Parasitology

Common gastrointestinal parasites are prevalent in the Kyrgyz population. There is, however, a clear difference in the prevalence by the type of household water source used. The Bishkek SES reported on data which demonstrated the gradient between residents connected to water pipes and residents not connected. The main strategic problem about gastrointestinal parasites is where the priorities should be. Even if helminthiasis is eradicated from patients of hospitals or from school children, recurrence is very likely if the water source remains unchanged. Therefore, the current practices of screening hospital patients and cohorts of schoolchildren are questionable. The most realistic actions in parasitology could be identifying special risk groups needing to be screened and given eradication medicines, and to approach parasitic epidemiology on the aggregate level, in order to identify populations whose water supplies would need to be arranged or fixed.

In the focus group on parasitology, the anti-malarial actions in the Southern Kyrgyz Republic border areas, where some malaria occurs, were discussed. The problem is not very wide, but potentially important. Many of the preventive measures being taken were not considered to be in all respects compatible with international recommendations.

Use of data on infections

The local SES keeps careful records of the infections by counting them from the emergency notifications. The manually kept tally by pathogen is passed, both by telephone and later by sending the paper forms, to the oblast SES. The oblast SES aggregates the data and sends them to the DSSES in the form of tables. In the DSSES, data from different oblasts are assembled into national reports, which are issued weekly, by pathogen by oblast.

There were variable answers to the question of what actions resulted from the data relayed to the national level. Some underlined the speed of the responses, some referred to the utility of obtaining wider pictures of the country with regional and seasonal variations. The overall idea is that the statistics would reveal occurrence patterns and changes that would require special actions in addition to the routine work. There was no evidence of the data being processed mathematically for epidemiological modelling.

Epidemiology services at the oblast and national levels

The grassroots level work is done by the local SES. Expertise from the oblast and national level was reportedly needed for investigation of exceptionally wide outbreaks and for the diagnostics of rare and dangerous pathogens, and also for expert advice on how to proceed with epidemiological infection control in cases of rare and dangerous pathogens.

The role of national level epidemiology was explained to be in making conclusions and giving policy advice based on the data. Much of the use of the national level had to do with the hierarchical arrangement of specialized laboratory services. The local level has instructions on where to send samples for analysis in suspected special cases.

5.2 Sanitary hygiene

The sanitary hygiene function covers communal/municipal hygiene, food hygiene, occupational hygiene, school hygiene. As detailed below, the range of activities varies in the different subdivisions, but there is obviously an inspection/controlling responsibility in all these functions in order to ensure the security of health aspects.

Communal/municipal hygiene

This subdivision is responsible for securing favourable living conditions for the population. Specifically, it is responsible for hygiene in municipal facilities, for control of waste collection and for control of the quality of bathing and drinking-water.

The subdivision of municipal hygiene inspects and oversees the following facilities: all health facilities; hotels and hostels; saunas, laundry facilities, bath-houses; theatres, cinemas and other cultural events facilities; resorts; waste dumps; water supply and canalization systems.

Water control and waste management require most attention. SES has the main responsibility for the quality of the water. According to SES data, the chemical and bacteriological indices of tap water coming from the water plants do not meet the norms in about 10% of the samples taken.

In the rural areas many pipelines are currently in a poor condition. Maintenance and necessary repairs have been neglected since the transition of rural economic institutions at the beginning of 1990s. Responsibility for the pipelines is now shared between several bodies: about 150 water nets are run by the Rural Water System of the Ministry of Agriculture, and at least a similar number by the local authorities.

Rehabilitation of rural pipelines will be on the agenda in the forthcoming project funded by credits from the Asian Development Bank and the World Bank. Under the World Bank credit, rehabilitation will take place in three oblasts – Talas, Issyk-Kul and Naryn. A planned DFID-funded project in these oblasts will include training, hygiene promotion and also improvements to the monitoring of threats to drinking-water quality and environmental health. The local SES will be involved in

the projects. As part of the project work, the management of local rural water systems will be transferred from the Ministry of Agriculture to local Commissions of Water Users.

In urban areas there are plenty of small water plants under the management of local administrations. The condition of these water systems is often poor. In the rural villages the situation is even worse. There are often no functioning water plants or pipelines, so that many people have to take their drinking-water from springs, rivers or irrigation canals.

Another major problem is the condition of water pipes in urban areas. Old pipelines are prone to breaking by themselves or due to accidental events. Leakage and breakage are worsening the quality of drinking-water.

Earlier water works had their own laboratories, even in rural areas, to control the quality and safety of drinking-water. Now, as in the case of Kara-Balta, the water plant no longer has a laboratory. The rayon SES takes all samples and carries out investigations. Several local SES offices have made contracts to provide laboratory services for operational control of drinking-water in rural pipelines in some rayons.

SES also controls the sewage system. Sewage plants have their own laboratories for operational purposes. SES controls the effectiveness of purification and the quality of discharged sewage.

Control of waste collection is another area of SES work. Domestic waste is collected and managed by a special group from municipal organization. In general, waste control is exercised through spot-checks in the streets, parks etc. Often this is a part of the daily work of SES staff outside the municipal hygiene division. Thus it is a part of overseeing general hygiene in different places and facilities and premises.

In Bishkek, the household waste is transported to a landfill site some kilometres outside the urban area. Lack of waste collection containers and bins is a major problem. In Bishkek there are currently some 500 containers in use, while about 1500 would be needed. Transportation is another a problem, with lack of proper vehicles, and insufficient money for fuel and maintenance and spare parts.

Food hygiene

The SES supervises and executes actions against food-borne diseases and food poisonings, to control working conditions and the implementation of sanitary-hygienic requirements in food premises and retail places.

Supervision takes place by visiting all kinds of premises related to food, food handling and sales (including markets and street vendors) and catering. The frequency of visits depends on the category to which the facility has been assigned. There are three groups:

Group 1: The facilities meet all the requirements;

Group 2: The facilities meet almost all the requirements; the shortcomings still in existence do not present any danger to the population;

Group 3: The facilities do not meet the requirements and they are close to being dangerous to the population.

Facilities of group three are visited much more often than those of group one. Such classification exists not only in food hygiene but in every other area of SES work (industrial hygiene, hygiene of children and teenagers, etc.). This classification seems to be fair, but is not very flexible. Enterprises and organizations are assigned to these categories only once in a year. Assignments can thus only be changed based on findings and conditions during the previous year. More flexible systems are needed. This would allow better management of the workload of the SES staff by freeing their time which could be reallocated to activities in the priority areas.

One special problem seem to be the new food entrepreneurs who have little knowledge of food hygiene or hygiene in general. They do not contact the local SES before starting operation. Also the street vendors constitute a big challenge to SES food hygiene.

In the Kyrgyz Republic all agricultural food products should be tested by the State Veterinary Inspectorate (SVI) before direct sale on the markets. For this purpose, SVI operates its 45 local veterinary laboratories in the country. The same organization also controls imported food. SVI is responsible for the safety of animal-based food until the food reaches the markets.

Together SES and SVI cover in principle the whole range of food hygiene. They have the potential to create good joint efforts to fight brucellosis and other zoonoses, which are major problems in the Kyrgyz Republic. Current cooperation is still at the stage of good intentions.

As said, the street vendors are a problem. Much food of all kind is sold without control in the streets or even from house to house. This lack of control can partly explain the high figures of salmonellosis, dysentery and brucellosis and other intestinal infections. Control of street food vendors and of the quality of food should be more effective and carried out by SES in collaboration with local police/municipality.

The division of food hygiene is responsible for controlling the contents of the iodine in salt. Iodine deficiency is endemic in the Kyrgyz Republic. The reasons for iodine deficiency are manifold. The soil in the Kyrgyz Republic is short of iodine. The daily diet contains very little sea fish. The use of non-iodized salt is very common. In a survey made by the SES, school children brought salt from their homes and the SES examined samples. It was calculated that the use in the homes of the salt tested in the samples would result in the diet containing only 4–5% of iodine requirements.

The country traditionally operated a successful policy of iodine supplementation of salt. It is still prohibited to import any non-iodized salt into the country or sell it. Following the economic changes, the control over import and sales has been lost. Non-iodized salt is now being widely sold on the markets. Non-iodized salt costs less than half the price of iodized salt, which leads to the consumers choosing the cheaper alternative. Since 1995 there has been an enormous increase in disorders caused by iodine deficiency:

Year	1995	1997	1999
Disorders showing iodine deficiency	5261	17981	75510 (survey)

In some regions up to 60% of the children have iodine deficiency, and on average 18% of young people suffer from insufficient iodine intake and its consequences. Iodine deficiency is especially common in the Southern part of the Kyrgyz Republic.

This problem is recognized to be a major public health problem. There has been a national programme, and a revised programme, for safe food and nutrition, where iodized salt is one priority, but as the figures show, there is still much to do.

The SES controls iodine in salt through its inspections, and also educates people to understand the necessity of iodine in the diet and the hazards to health of using non-iodized salt.

There have also been attempts to promote the production of iodized salt through cooperation with enterprises in the salt industry. Two plants are currently performing iodization of salt. It has been calculated, that in Bishkek this production may cover 52% of the need, but in Osh only 1.5%. Overall, only about 5% of the need is covered.

The Kyrgyz Republic has received help from UNICEF (two iodizing facilities and some ingredients) and there is a plan in Jalal-Abad to built a salt purification plant, which would, in addition to purifying the naturally occurring salt from the heavy metals, also take care of its iodization.

In fact there have been studies and experiments on how to increase the amount of iodine in the daily diet: to use bottled water with added iodine; to develop yeast containing iodine, which would iodize daily bread. These possibilities are still under research.

More efforts and imagination should be put into improving the situation. Production of inexpensive iodized salt should be promoted by various support measures. People's awareness should be raised, and the illegal sales of non-iodized salt should be curtailed more effectively.

Occupational hygiene

Rayon or city SES offices are responsible for occupational hygiene. Occupational hygiene is nearly synonymous with labour protection. The main goal is to prevent general and professional morbidity and work accidents, and to control the standards and requirements of industrial hygiene and the content of toxic substances and physical parameters in the working area. Occupational hygiene operates through inspections of working conditions for such parameters as dust, noise, lightning, vibration and electro-magnetic fields in the working environment. Safety of the workplace is also one of the focuses of occupational hygiene.

Preventive measures in occupational hygiene start in the phase of design and construction of a new factory or plant. First, the building site of such a development is approved. Later during the construction phase the SES starts controlling the plant.

Certain occupations are identified as being specially risky or demanding. Their standards of hygiene and working conditions, including even special diets in come cases, are in a special category. This area is regulated by a decree "On Free of Charge Issue of Milk and Other Equivalent Products, Detergents and Disinfection Substances to Employees Working in Harmful Conditions" (Government Resolution # 374).

Regular preventive inspections of the employees are fundamental to occupational health and hygiene in the Kyrgyz Republic. SES designs the regulations on the coverage and on the frequency of inspections. The clinical services, especially family group practices (FGPs), must bear the considerably high burden of conducting these inspections. In comparison with internationally proven practices these inspections are much more frequent. Inspections are also

targeted very widely at large numbers of workers in various fields of work. The clear international trend has been to take a critical position towards the use of inspections for occupational health. Inspections are nowadays being done less often, but they are targeted at selected workers in risky work processes or circumstances. Thus, the large volume of occupational health inspections represents one area, where the Kyrgyz health sector should prioritize. Many health inspections have been carefully assessed to be of much less value for prevention than initially thought.

Another area of work of the occupational hygiene division is radiation hygiene. On the primary and oblast level, SES work in this area is mainly limited to controlling the safety techniques of the radiological departments at the health facilities and mainly X-ray safety. The lack of proper measurement equipment is limiting the capacity of rayon SES's to monitor radioactivity in the environment or e.g. radon activity of indoor air.

In this field new technology applications like lasers and other non-ionizing radiation devices also set new demands on the SES and its functions and raise the need for new measuring equipment.

The field of radiation hygiene is divided among several organizations outside the health sector. The team's assessment of the rationale of this division is presented in a separate chapter on the interfaces between the SES and other sectors.

Hygiene of schools and kindergartens

Throughout the whole three-tiered SES system, the hygiene of schools and kindergartens - or alternatively expressed: of the children in these institutions - is one cornerstone of the hygiene services. The sanitary doctors and their assistants in this sector visit all schools and kindergartens frequently according to a schedule, which is adapted to the school year.

The SES inspects the school premises very thoroughly. In the main focus are naturally school catering, the hygiene of the toilets or outhouses, the safety of the premises and other similar targets. The SES, however, goes well beyond inspecting these targets. The SES controls many features of the healthiness of arrangements inside the classroom: ergonomics, arrangement of curricula and schoolwork in general. The SES reportedly intervenes in the name of prevention of myopia and scoliosis in the internal layout of classrooms. Both myopia and scoliosis have been found long ago to be problems which can not be prevented.

During a visit to one school it became very obvious that the same children are the very intense focus of school health professionals from the SES, school nurses, school doctors and a wide number of specialist physicians, who regularly participate in the examination of children.

The intensity and input of staff time by SES and also by other health professionals raises serious questions about the utility and justification of focusing all this attention on children. The arguments in support were very general: "Children are our future; we must take good care of children". Some observers inside the SES organizations clearly shared the review teams critical view of this activity. They explained the intensity in terms of the traditions of the Soviet times. Children were declared a high priority for the nation. Any activities designed to be in support of children were allowed to continue unchallenged.

The criticism here is not meant to say that the SES should not inspect schools, their hygiene and safety. However, such inspections do not need to be very frequent. SES and other school health

professionals should coordinate their activities further. Both should focus on the priority problems of the children. The school itself, directors and teachers, should be in charge of what goes on in the classroom. In their training, teachers should receive basic information of what is healthy and what is harmful.

In the light of the many challenges faced by the SES and the whole Kyrgyz health sector, the present allocation of time and resources to schools needs to be challenged.

Inspections

Reportedly as a result of complaints from private enterprises about the number and frequency of all kinds of inspections by various different authorities, the numbers and frequencies of SES hygiene inspections have also been limited through a special governmental decree. The SES, together with other controlling agencies (for example tax officials), are now allocated a limited number of "tickets" of entitlement to inspections. The inspections are now infrequent and as a rule are planned to take place on agreed dates and times. Additional inspections are possible only with the written permission of the National Commission for the protection and development of competition.

Ruling out or reducing unannounced inspections is clearly against all sound principles of health surveillance. Knowing that unannounced inspections are not possible could in the most extreme cases lead to the speculative meeting of standards only to try to satisfy inspections.

The solution to this problem would be to base the inspection of private (and also public) facilities on a mutual agreement between the SES and the owners of premises or the operators of the activity to be inspected. Then, depending on the characteristics of each individual subject, the way their operations work, physical conditions, etc., a precise plan for inspections and necessary samples could be mutually agreed. But even under such an agreement, unannounced inspections should take place, especially if SES has any reason to believe that the facility or its operations constitute a risk to health.

5.3 Laboratory services

SES laboratory services divide along the overall division of SES activities in epidemiology and sanitary hygiene. Epidemiological laboratories are basically microbiological laboratories for the analysis of virological, bacteriological and parasitic samples. Sanitary hygienic laboratories consist of chemical, physico-chemical and microbiological laboratory services. The physico-chemical measurements are in many cases very different from traditional laboratory work: instead of making investigations on samples, many measurements are made directly by using special measurement devices.

The scope of services is very extensive. For example in the light of the Ministerial order listing the range of investigations of the bacteriological laboratories there are altogether nine groups of bacteriological investigations for sanitary hygienic bacteriology, ranging through analysing air samples, food, drinks, sterility of objects (such as hospital instruments), cosmetics, water and soil. The human infection related list covers analyses for all the most important human pathogenic bacteria and also a number of sero-bacteriological investigations. However, only a fraction of the listed microbiological investigations were done as a routine. For certain special purposes there are specialized laboratories; for example, for the screening of donated blood for HIV and hepatitis, the localized and regional network of AIDS centre laboratories does the laboratory work. Similarly tuberculosis investigations are done by the special laboratories of the

tuberculosis dispensaries or hospitals. Within the SES's own laboratory network there are special laboratories for rare pathogens, for control and reference purposes or for the determination of subtypes of certain microbes. The overall structure of the laboratory network will be discussed later. The general principle has already been that basic bacteriological investigations will be performed by all laboratories on the local level, but virological investigations have been, and in future will even more, be concentrated in two special laboratories situated in Bishkek and in Osh.

Sanitary hygienic laboratories perform, or are at least capable of performing, a wide variety of most variable tests on the safety of consumer ware. They regularly measure the caloric contents of school meals. They analyse soil samples for chemicals and microbes, and washouts from surfaces that should be clean or sterile for microbes.

SES laboratories are responsible for analysing the safety of goods at the point when they enter the market, or when they are imported to the country. The State Veterinary Institute is responsible for inspection of meat before its entry to the market.

Radiation control measurements are a special feature of SES laboratories. Such measurements are made on soil, mining tailings, building sites, building material and clinical radiological instruments.

Samples for human infectious pathogens are retrieved either from the clinical services in places where the SES is responsible for the clinical microbiological services, or taken by the SES laboratories from persons who are being investigated because they have been identified to have been in contact with a patient with a major infection. For the patients of clinical services, who usually seek help on their own initiative, there is a user fee for bacteriological services. Only designated poor persons or families may get exemption vouchers from the local authorities. The user fees can be rather high compared with the general purchasing power of incomes. Persons who have been sent to laboratory investigations by order of SES epidemiologists get their investigations free of user charges.

For investigations serving the hygienic control of enterprises or, especially, the safety and hygiene quality control of products, the SES has the legal right to collect fees. These fees are an essential part of income for many SES offices, but not for them all, because of differences between communities.

Forty-four of the 54 SES laboratories provide the basic clinical microbiological services for the local hospitals, polyclinics and FGPs. Thus only a small fraction of rayon level clinical services have their own clinical microbiological services. Even some oblast central hospitals rely on SES laboratories. There is no cases of a clinical laboratory providing the microbiological analyses for the SES. This unusual arrangement is an outcome of historical development: SES services existed and combated infections before the development of clinical microbiology.

During the numerous visits by the review team and/or its laboratory specialists to the SES laboratories and also to some clinical laboratories, the general impression and picture was strikingly similar. The laboratories have their space and staff, but their instruments and other necessary devices are below the level needed for modern microbiological services. Although bacteriology is a sector of laboratory work, which still largely operates on manual work (in contrast to the chemical and biochemical analysis techniques and equipment), the laboratories are in need of very basic equipment, microscopes, simple instruments, media and reagents. Another striking feature is that the laboratories do not seem to be at all busy. Also, the logbooks

of the numbers of samples and separate investigations analysed showed low figures. At the same time, the SES itself has very detailed regulations on which persons must be examined for exclusion purposes for which pathogens. On the basis of the logic and stipulated frequencies of the regulations, there should be a large volume of investigations. From the clinical side the figures are even more worrying. If the picture received on the visits is representative of the whole country, there are very basic shortcomings in the bacteriological diagnosis of important infections.

Functionally the fact that clinical microbiology is placed on the SES side is at least potentially a source of inefficiencies and also of unnecessary or inappropriate practices, since the laboratories and clinicians are not in close touch with each other. In clinical infections, the clinical services should be in the priority position and any anti-epidemic activities should be regarded as secondary. As a matter of fact, this very fact may explain partly the underdevelopment of clinical microbiology. It has been out of sight and out of mind. In the forthcoming Health II project the plan is to strengthen the SES bacteriological laboratories through substantial investments and also repair of facilities. These investments, however, do not solve the structural problem described here.

In virology, the services will be concentrated in two centres, as said. Most of the virological analyses are – apart from a small number of special tests – done for epidemiological purposes, either for preventive or clinical epidemiology. In virology, the need to have the services near to the clinic and to the patient is not generally as vital as in acute bacteriology. Also, the urgency of getting analyses done is not as high a priority as it often is in bacteriology. Thus in most situations, the virological samples can be taken in the hospital and then transported to the virus laboratories.

6. Functions of the special institutions under SES administration

General role of the special institutions

The SES has its special national level institutions as described in section 4: the AIDS Centre, Anti-Plague Centre, Health Centre (for health promotion), the Research Institute of Prophylaxis and Medical Ecology and the Republican Centre for Immunoprophylaxis. Their functions have all evolved at particular times in the history of the SES services. The overall principle has been to allocate a sector organization for a set of specific coherent activities.

The institutions constitute a very heterogeneous group of organizations, which all have the common denominator of valuing highly the relative autonomy they enjoy. They each have their own rational and justifiable functions. If these institutions were not in charge, some other unit elsewhere should be. Apart from the Research Institute of Prophylaxis and Medical Ecology, all the others have regional or local representation under institutions with precisely the same names. These institutions operate on the principle of vertical organization. The problems of this way of organizing will be dealt with later in sections 7.1 and 7.2.

Individual institutions

The **AIDS Centre** acts as the expert centre for combating the HIV infection and AIDS problem in the Kyrgyz Republic. It provides preventive services through the mass media and separate programmes. It has a national laboratory and a network of 38 localized laboratories – usually as parts of other existing laboratories – all engaged in the detection of the infection and checking the safety of donated blood. The centre also acts as the focal point for international cooperation

and assistance in the field. Each oblast has its own oblast AIDS Centre for the implementation of the activities on the regional level. The whole system of AIDS Centres employs about 200 people, of whom about 70% work in the laboratories.

The AIDS Centre is an example of a successful and creative response by the Kyrgyz Republic to the emerging problems of HIV and AIDS. The centre is using very modern approaches appropriate for countries in a similar HIV/AIDS epidemiogical situation. The centre could serve as a good example of how to move ahead in an unprejudiced way and experiment and adopt new practices. The centre caters for all the needs related to HIV diagnostics and safety of donated blood. It still has to send those samples which turn out to be positive for HIV to Almaty to be confirmed, although this could be done with relatively small additional investments in Bishkek. The centre has received substantial international financing up to 80–85% of its budget, which has helped to build the Kyrgyz capacity. Even if the international financing diminished or ceased, the know-how and networks would remain.

The **Anti-Plague Centre**. The history of this centre dates back to the time some 100 years ago when the Russian Czar established similar centres elsewhere in the Empire. It was originally targeted to combating plague, which occurs naturally in the Kyrgyz mountain areas. Functions related to a number of other dangerous bacterial and viral infections (for example cholera, typhoid, brucellosis) were later added to the centre. The Anti-Plague Centre also operates on the regional level through two separate centres or branch offices of the main centre in Bishkek. Together, the centre and the two oblast branch centres currently have about 170 employees. A large proportion of them are specialists in the activities of the centre, to a large extent trained on the job. Laboratory services are the core function of all Anti-Plague organizations.

Plague occurs endemically in the Kyrgyz Republic. The main known source is the fleas of marmots residing in the country's mountainous areas. Marmots are hunted for their fur. Hunters and other people handling the fur may be exposed to contact with plague-infected fleas. The centre operates by sending expeditions to the mountain regions to track the fleas of marmots. To combat plague, the centre sends out 10–12 expeditions per year to the mountain regions to catch marmots using special traps. If plague-carrying fleas are discovered, the whole region is declared to be banned for hunting to prevent the spread of the infection. The centre owns special vehicles and 156 horses for transportation. This old tradition has been continuing unchallenged for years.

Though the Anti-Plague Centre started out as a special centre with the mission to combat plague. It has later developed a long tradition of dealing with a wide range of dangerous microbes; the current list includes anthrax, cholera, brucella, various dysenteric bacteria, rickettsiae, malaria, (some aspects of) hepatitis viruses, arboviruses, several zoonotic haemorrhagic viruses and rabies. The laboratory services of the centre overlap significantly with those of some other laboratories. The Anti-Plague Station would have a clear role if it focused its scope and specialized in those pathogens needing a P3-level special safety facility. This would also mean reducing the number of branch offices to a minimum. This would be particularly important in view of the unavoidable future investments which need to be made. The laboratory has a strong tradition of training. The training function should be strengthened and coordinated with other training activities of the SES.

Much of the activity in the centre is related to the detection of individual pathogens. The laboratory confirms the diagnoses and determines the subtypes if applicable. The experts of the centre will also give anti-epidemic advice to the field.

In the system of laboratory services the functions of the laboratory of the centre were assessed to be rationally placed on the national map of laboratory services.

The **Republican Centre for Immunoprophylaxis,** as its name states, is in charge of the immunoprophylaxis programmes and policies. There are immunoprophylaxis "specialists" among the epidemiology sector SES physicians The Centre now plans, monitors and supervises the execution of the programmes as well as ensuring the logistics of the vaccines. The immunization programmes follow international recommendations with the addition of currently vaccinating newborn children against hepatitis B. On the oblast and rayon levels, the SES organizations have immunologists or assistants for monitoring and supervision purposes.

Until recently the centre, through its regional and local level counterparts, was also responsible for the administration of the vaccinations The responsibility for vaccination itself has recently been transferred to the FGPs in those areas of the country where FGPs already operate. However, the initial phase of the transfer seems to have raised some concerns since only a fraction of the FGP staff responsible for vaccinating have undergone the necessary training. The Centre handles all other aspects of immunoprophylaxis, from acquisition of vaccines to statistical monitoring of both immunization coverage and immunity status, which is studied nowadays through population sample studies. The information systems for keeping the statistics raise questions of cost-efficiency.

The **Research Institute of Prophylaxis and Medical Ecology** has a name which is not easily understood by a foreign observer. However, the institute itself has been designed to be a modern combination of research based expertise functions and an extensive laboratory. The institute is also involved in the higher education of specialists for the field. The policy expertise groups for epidemiology and sanitary hygiene are found in this institute.

This institute has been recently reorganized into its present form. The purpose has been to establish a knowledge and research basis to serve the field of health protection. There are four departments in the organization, namely: Epidemiology, Hygiene, Postgraduate training and retraining, and the Clinical base (department of professional diseases based in the National Hospital and the Republican Infectious Diseases hospital). The first two departments have relevant laboratories, which are supposed to be the reference laboratories (i.e. viral, bacteriological, a general "national laboratory", and a quality control lab for immunobiological materials, i.e. vaccines) and expert groups for policy analysis in epidemiology and hygiene. The institute has special functions and responsibilities for hospital infections and occupational health research.

The institute is collaborating with the Kyrgyz Medical Academy in the practical training of specialists of related areas. It also has worked together with the United States Centers for Disease Control (CDC) on a number of issues, such as the study of serologic prevalence of hepatitis. Similarly, the institute is participating in an EU programme, Intas, which is directed to researchers of countries of the former Soviet Union. Bilateral collaboration has been established with several foreign universities.

The research programmes of the institute were interesting and the overall approach was modern in spite of the severe limitations set by the shortages of laboratory equipment. However, there does not seem to be a coherent research strategy or policy oriented to the highest priorities of the Kyrgyz Republic. In the situation of a country like the Kyrgyz Republic there should be a balance between one's own research and efforts to follow the findings of research elsewhere, on the one hand, and, on the other hand, to research the new practices that have been adopted or the

old practices that have been modified. One of the critical shortcomings for all functions of the SES seems to be the low level of knowledge of how health protection and prevention are practiced outside the countries of former Soviet Union.

7. Structures of the SES network

7.1 Principle of three tiers

The SES is a part of the Ministry of Health's organization. Like all health sector organizations, the SES is organized as a vertical structure consisting of three tiers: the national, regional and rayon levels.

The SES on each level is composed of the same basic three elements (epidemiology, hygiene and laboratory services) with their usual subdivisions.

The rationale for the employment of three levels is on the one hand to ensure that expertise, resources and equipment are hierarchically organized – i.e. the basic level deals with the bulk of common tasks and problems, the intermediate level is capable of tackling more demanding tasks than the basic level, and the national level has got the highest expertise and most specialized equipment in the country for selected tasks.

On the other hand, the hierarchical organization into three levels is also strongly oriented to the function of controlling the level below. Control takes place through reporting, through communication of statistics, through direct observation on visits to the organizations to be controlled, and in some areas through special methods of checking performance or quality of work.

The controlling function is not limited to the SES's own operations, but also laterally to a number of organizations in neighbouring sectors. The minimum common denominator and justification for exercising control is that the protection of health is somehow at stake. Thus the SES controls the actions of schools across a wide variety of issues, including curriculum development, the physical outlay of desks in the classroom etc. The fundamental thinking is that health as a value ranks especially high among other human and social values, and that the SES has a wide mandate to guard the health of the people. What is even more striking is, that the SES commonly uses retrospective fines to enforce its controlling functions on its peers. For example, primary care physicians are sentenced to fines if they are found to have deviated from the norms stipulated in the prikazes.

The hierarchical organization of tasks is in itself a basic method to ensure the rational use of scarce resources in any similar organization or activity. There are certain particular features in the hierarchy of SES that would deserve revision but the general principle is sound and recommendable.

But when it comes to the culture and exceptionally wide controlling of other professional organizations' operations and daily work, the whole practice must be subjected to critical review. First of all, it is clear that the nature of health protection includes rights to inspect and to exercise legally stipulated power over the targets of inspections. Thus, the SES rightly has a controlling role over the hygiene of food products, over the safety of drinking-water, etc. But the extension

of similar controlling to peers has multiple negative outcomes. We consider that the controlling function, enforced through fines, effectively prevents two important developments:

1. Building and developing true partnerships between the clinical services and the SES.

2. Necessary professional development of professional groups and organizations along the lines that similar groups and organizations develop in other countries. A profession which gets the message "We do not trust you" easily fails to internalize its values and best professional practices. Development of the self-control, performance and quality work of the organization all suffer. We have observed a clear and "healthy" protest against the SES's controlling function from the FGP general practitioners, who are in a most intensive process of developing their professional identity. The theories and literature of organizational behaviour and development strongly support the principles of encouraging self-control and internal measures instead of external.

Moving away from the culture of command and control does not mean neglecting the need to control essential features of performance and quality. Professional organizations need to develop their own self-regulatory practices of ensuring and promoting quality, including professional audit. Quality, professional conduct and access to clinical services need to be supervised on all fronts, not only with respect to infectious diseases. The international map of health services indicates that there are various alternative ways of arranging such supervision, which also needs sanctions available for extreme cases of negligence and misconduct.

7.2 Internal subdivisions in all SES organizations on the three levels

On all the three levels, all SES organizations are subdivided as a rule in a similar way: There is first the division between epidemiology, sanitary hygiene and laboratory services. Sanitary hygiene divides regularly into four further subdivisions: (1) children's (kindergartens and schools) hygiene, (2) occupational hygiene, (3) hygiene of food, food processing and catering and (4) community hygiene (addressing mainly issues of water safety and safety of waste management.

Epidemiology as such is not subdivided as clearly, but the function of disinfection is under the heading of epidemiology. There are also specialists in parasitology in the epidemiology sector of the SES.

Laboratory services are divided first along the epidemiology – hygiene divide. The next division is then by the type of laboratory activity – under epidemiology these are: bacteriology, virology, parasitology, and under hygiene there is usually a separate unit of bacteriology (addressing for example problems of bacterial contamination of water and food), a unit of chemical analyses and services using physico-chemical analyses in such areas as ambient air, soil, radiation, noise, workplace lighting, etc.

The shapes of the subdivisions derive from the development history of the services. We did not encounter any movement toward "generalism" on the local level. Generalism on the local level could be expected to provide more efficient use of the workforce than the current sectorized division of tasks. For example, on a visit to a local rayon SES it turned out that one team working with inspections had been not able to carry out such inspections due to the national limits to the numbers of inspections. The sectorized organization of the work resulted in the team

not being able to move to work in other sectors instead to ensure the efficient use of the workforce.

Organizations of the size of rayon SES offices and rayon SES laboratories tend to move increasingly towards "generalism", although special skills are valued and acquired. Healthy generalism would mean that for all the main basic tasks there is backup from the other specialties. Such backup can easily be needed in cases of various irregularities in work – sick leave, repairs of instruments, absence for training, etc.

7.3 Laboratory network

Much of the operation of the laboratory network and its problems were already discussed in section 5.3 in the text on the laboratory services as functions.

The laboratory network presents several problems and challenges:

In the area of human microbiology, especially bacteriology, the needs of the clinical services should take priority. These services are currently often at a problematic distance from the clinical services themselves. At least in the medium or long-term future microbiological laboratories should be a part of the essential clinical services. In any case, each oblast central hospital should have a laboratory of its own, because these hospitals should treat more complicated and difficult cases. The workload does not come from infectious disease departments alone, but also from general surgery, internal medicine, paediatrics, obstetrics, etc.

Anchoring human microbiology to the clinical services would prevent any major consolidation of SES microbiological services, for example to the oblast level, which would otherwise be worth considering.

If, and when, the priority is given to the clinical services, the big question of the future of oblast SES microbiological laboratories in the field of human infections will arise. These laboratories may have well justifiable regional responsibilities in the analysis or rare sanitary hygiene pathogens, but the human microbiology laboratory services should be in the oblast central hospitals.

The sanitary bacteriological laboratories could be restructured, and even consolidated, but only after a careful analysis of how samples would be collected, transported and reported back. After all, the catchment population size of about 100 000 residents does usually warrant a basic hygiene laboratory service. Instead of a rigid general pattern of consolidation, a more flexible development course of regional specialization should be pursued. The team saw good examples of two neighbouring rayon SES laboratories sharing certain services in a rational way.

In principle the national level laboratories should be special "tertiary" laboratories, which can perform investigations not possible on the lower levels, or act as reference laboratories, which confirm the findings of lower level laboratories. They may also determine subtypes of certain microbes for clinical or epidemiological purposes. They could also carry out certain long-term epidemiological studies important for public health, for example monitoring of the multiple-resistant strains of staphylococci in intra-hospital infections. However, currently not all national level laboratory investigations are tertiary, either by their nature or level of sophistication. The DSSES bacteriological laboratory inspects imported food for bacteria – a task which logically

could be the responsibility of the rayon or city level laboratory in the places where the food is first unloaded.

There is no problem in the national level laboratories of the current services or equipment overlapping. However, if all the national level laboratories were upgraded to meet modern standards – and there is much need of such upgrading – it would be very wasteful to invest in each unit separately. For future purposes, it would be rationale to consolidate the national level laboratories by their main functions or foci.

7.4 Structures of the special institutions

The short time available for the review mission did not allow for detailed analysis of how the special institutions fit into the whole network, or how they interact among each other. Instead of trying to answer those questions, the question of whether the existence of such separate institutions is justified or efficient would deserve closer examination.

In principle, on the one hand, a separate institution with a clear set of tasks can easily become efficient and effective as compared with incorporating the same tasks inside a large and easily bureaucratic organization. The team believes that the AIDS Centre has succeeded in creating added value from its autonomy and relative size in relation to the whole SES. On the other, the present layout of the separate institutions raises questions of efficiency. All the centres are currently proudly holding on to their very own operations, even though sharing even some core functions and structures would produce clear efficiency gains. Examples of such core functions and structures could be found in support services: accounting, transportation, training, information services etc. A compromise worth considering would be to bring the currently separate institutions under the same organizational roof. In the first instance, the roof would obviously be only an organizational roof, but in future the institutions could share their premises.

The functions of the national level organization, including the DSSES and special institutions, can be summarized in three groups as: overall management of the whole SES system; analytical work; and specialized tertiary lab services and reference lab services. These functions can easily be accommodated in a rationalized and more systematic way. This will ensure better coordinated actions.

It is proposed that the DSSES will be in charge of the management of the overall SES and be responsible for:

- policy development
- human resources development
- resource allocation
- legislation.

An institution can assist the Department in terms of providing analytical work which will help the DSSES and the Ministry of Health in decision-making and operational management. This institution can also provide expert advice services on epidemiology and sanitary hygiene related issues. This institution can be developed on the basis of the current Institution of Medical Prophylaxis and Ecology.

Currently there are laboratory services based in all the central level institutions. There is almost a special laboratory for each pathogen. Consolidation of these laboratories as one well equipped

bacteriology laboratory plus one for special pathogens will allow improvement of laboratory services and infrastructure within the available resources. Reference virology, parasitology and hygiene laboratories will cover the central level functions. These laboratories can be based in the above-mentioned institution.

8. Information systems in the SES

Reporting upwards is a key feature of the three-tier system of organizing the SES. During the review team's work it has not been possible to get a full picture of all the events and statistics that are being reported. The local level SES offices relay reports on their own activities, on findings from inspections and on laboratory findings.

Reports on infections

The most important information, however, seems to be a product of (mainly) the clinical health services. Whenever an infection belonging on the list of reportable infections is detected in the clinical settings, a special case-by-case report is sent to the local SES. These reports are called in their English translation "emergency notifications" (EN). Each EN launches control and follow-up actions by the epidemiology sector of the SES. The contents of ENs are collected in the rayons or others sites where they are first registered. The information is then aggregated into tables and passed to the oblast level, which in turn reports to the national level. This reporting is called *monitoring.*

The aggregated data from all over the country are assembled weekly into tables reporting incidents of new infections by the pathogen, by oblast or by rayon. The weekly reports are then further assembled into quarterly and annual reports. Policy conclusions are then obviously made based on the reports and other information of the infection situation in various parts of the country. The system of assessing the information and passing it to policy analysis and decision-making remained rather unclear. Obviously much depends on the overall picture the DSSES directors and decision-makers get. In all discussions the importance of passing the information upwards as quickly as possible was underlined. The current speed of the information flow would be, in the light of the examples shown, about 1–2 weeks from the event itself. Weekly aggregation was the shortest time unit used. If dangerous outbreaks occur, information is then passed either by telephone or by experts from the oblast or national levels going to the site of occurrence and observing events directly.

In the preparation of the Health II project, the DSSES has proposed investing a substantial sum of money in the "monitoring system" of the SES. Using this money, each SES office on the rayon, oblast and national levels would be equipped with a PC connected through Internet and e-mail. These connections would allow even faster flow of information between the different levels and units.

This plan was discussed in a special focus group, in which those DSSES professionals who deal with information collection participated. The main content of the information was conceived to be the data extracted from the ENs. Besides reportable infections, other types of information possibly to be included were reported to be: parasitic diseases, occupational diseases, food poisonings and other mass poisonings (for example from mushrooms) and the immunization coverage of the population. All visions of how the information would be collected in a way suitable for coding, electronic communication and aggregation, were at a very early stage.

It is also planned that the Medical Information Centre will develop a national method for collecting clinical data from ambulatory and hospital services.

Clinical information would be collected using three instruments:

1. From all encounters between physicians and patients/clients in the FGPs and polyclinics, including home care linked to these services, data would be collected using an episode-based data collection form. The centre uses the term "case-based", but in the international terminology on registering ambulatory care events the usual term for the same phenomenon is "episode-based". The data collection sheet is less than half of an A4 sheet, but is loaded with numerous items of information. On one sheet, information on up to 6 encounters can be stored. After that a new sheet will be used. Among the items of information to be collected are the diagnosis (main diagnosis) using ICD10 codes, information on investigations and treatment, and, of course, information about the patient him/herself and about the service provider. In the near future, the data belonging to one and same person will be identifiable through a personal identification number. These numbers have not yet been issued to all citizens. The process will take a few years to be completed.

2. Data on referrals to specialists and hospitals will be collected using another form, which is simpler than the form described above.

3. Data on inpatient care is collected on the third form.

Linkage of data across 1, 2 and 3 will be possible in the future.

The manually entered data will be entered into the computers in the polyclinics or hospitals. At this point the data will be aggregated and reported further using reporting features of the software in use. Some sections of the services will not be able to enter the data locally. In those cases, the data collection forms will be passed upward in the organizations for data entry.

The information, which is now collected manually by the SES on the reportable infections, will be clearly coded in the collection system of the Medical Information Centre. The present data collection form has got space to include information on whether the emergency notification was made or not.

In the future, when the MIC data will be regularly and reliably collected, SES could base its infection epidemiological data on material collected and received through the MIC. The only difference in timing will be a tolerable prolongation from the current 1–2 weeks (to get weekly reports) to 1–2 months to get monthly reports. Computerization of the current SES process of passing the information upward will shorten this lag by 1–2 days.

This review team report will be recommending a reorientation of epidemiology from looking mainly at the grassroots level events to focusing mainly on the levels of communities and populations using aggregate data. For those purposes, SES epidemiology will need an extensive basis of data from various sources. Clinical data do not reveal the true occurrences. Much of the necessary additional data collection will have to be organized by the SES itself or in collaboration with other surveys or data collections. The computerization of SES offices will be useful for these purposes. SES epidemiology specialists need substantial training in the new epidemiological statistical methods. In conclusion, the SES should not try to establish its own national comprehensive registration system for infection data, but should plan and develop

additional information gathering for its own broader purposes independently. Since the SES deals with outbreaks, which at times may need very urgent action, the information systems should be ready to be of effective service in those situations, too.

In addition to data on infections SES collects a wide package of data from its operations for annual statistics. The annual reports are examples of useful data for policy analysis. Some individual items might need methodological or measurement revisions. In the future, configuration of the data collection using suitable office software will be needed. Compilation of the annual statistics directly into the final electronic format will save manual labour.

9. Financing of SES services

9.1 Sources and level of funding

SES services are funded by allocations from Republican and local government (i.e. oblast, city, and rayon) budgets and official fees ("special means").[1] As shown in Table 9.1, the services included in the SES have received a relatively small percentage of the government's budget allocations to the health system in recent years. In 1999, the government spent about 46 million som on SES services, constituting about 9.5 som per capita.

Table 9.1. Share of total public spending on health devoted to SES

1995	1996	1997	1998	1999
7.1%	6.8%	6.5%	5.7%	6.1%

Note: denominator based on total (i.e. Republican plus local budgets) government spending on health, including expenditures by other ministries not included in the regular MOH budget. Figures do not include revenues from official user fees.

Source: Kutzin, J., et al. (2000 forthcoming). Resource allocation and purchasing in the Kyrgyz health system. Draft report to the World Bank. Bishkek.

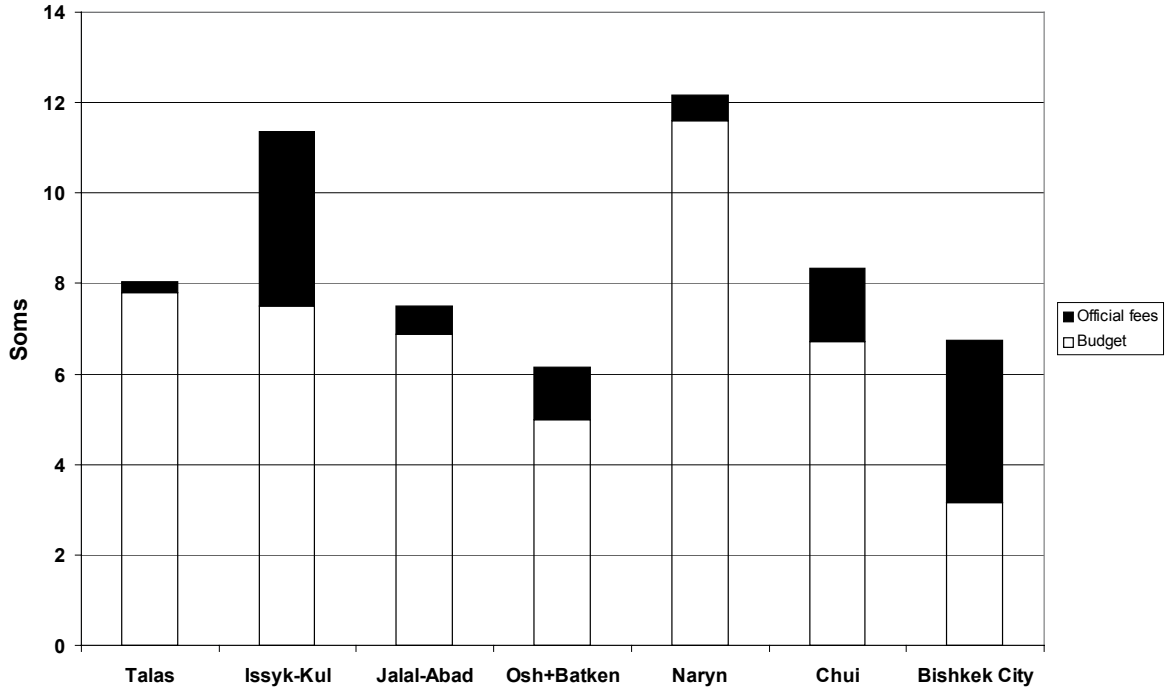
Official fees are an important source of funds. There is a fee schedule specifying prices charged for nearly 500 different activities, mainly laboratory services. In 1999, SES fee collections were equal to about 36% of the amount budgeted by government. When added to the budget, this brought officially recorded SES expenditures in 1999 to 62.6 million som, or 13 som per capita. Official fees thus comprised 26.5% of recorded SES expenditures in that year.

When expenditures by the Republican level are excluded, considerable variation is revealed in per capita spending on SES services across oblasts (Fig. 9.1). This variation exists both in the level of budget allocations and in fee collections. The low level of per capita spending for the SES in Bishkek City may be attributed to several factors, including its relatively small geographic area and close proximity to Chui oblast, plus the expectation that it will raise a relatively large amount of funds through fees (its fee revenues were greater than its budget allocations in 1999), and possibly also the presence of Republican level services in Bishkek. Even excluding Bishkek, however, there remains a more than twofold variation in the level of per capita budget allocations to SES, though this is slightly mitigated when fee revenues are included.

[1] As with the personal health care services system, unofficial or illegal payments are also collected for some SES services. The extent of such payments is unknown, however.

Variations in fee collection levels are related to two principal factors: (1) the capacity of the local population to pay; and (2) the presence of accredited laboratories, which have the right to perform fee-for-service activities. The latter explains why, for example, Talas, Jalal-abad, and Naryn oblasts have the lowest level of per capita fee collections: Talas and Jalal-abad do not have an accredited lab, and Naryn only has one. To some extent (again shown by Fig. 9.1) the criteria for public budget resource allocation (see section 9.2) counter-balance the ability of each oblast to mobilize fee revenues (e.g. Naryn and Talas have the highest per capita budget allocations for SES).

Fig. 9.1. Oblast government spending of SES by capita



Source: Kyrgyz government treasury data; population data from National Statistical Committee.

As with all government health (and other) services, the SES is funded at a very low level relative to perceived needs for the services that are meant to be delivered. Certainly, the level of per capita SES spending from all official sources is very low (13 som was equal to about US $0.33, using average exchange rates for 1999). This has given rise to calls for more government spending (as in other parts of the health sector) or the development of alternative sources of funds for the SES. As made clear in the recent World Bank Social Expenditure Review, however, the scope for increases in the level of public spending will remain modest in the foreseeable future, given the need to continue progress towards fiscal balance. There may indeed be scope for the Ministry of Health to consider an internal revenue reallocation in favour of SES services, but this would have to be at the expense of other services. Hence, the SES would need to demonstrate why its needs are more important and how it would use the additional resources. In all likelihood, if there is to be any reallocation in favour of the SES within the Ministry of Health, it is likely to be modest.

There have been some discussions and proposals for using payroll tax revenues mobilized for the Mandatory Health Insurance Fund (MHIF) to pay for SES services. In particular, this relates to

the proposal to have SES epidemiologists working with FGPs to aid health promotion and protection for the population served by that FGP. This proposal is flawed, however, and contrary to the reforms intended to have FGPs function as independent entities. First, it is important to recognize that, as noted in the Social Expenditure Review, the level of funding from MHIF is small compared to that received from the budget, and so this proposal would spread these very limited resources over a greater number of people. More importantly, such a change would complicate lines of accountability and finance within the system, as the proposal would ensure that these epidemiologists remain part of the SES while receiving payment from the FGP's insurance revenues.

As noted above, official fees contribute a substantial share of SES funding, much more than fees contribute to the financing of personal health care services (see Social Expenditure Review). Every SES station can perform fee-for-service activities, although most of these are for laboratory services and can only be done by accredited labs (of which there are a total of 18 currently in the Republic). Most of the fee-for-service activities are for individuals and firms that wish to obtain certification of their products for further sale. The desire to earn money through fee-for-service activities provides an incentive for the expansion of such activities. Sometimes, this can conflict with the responsibilities of other agencies, particularly the Kyrgyz State Standardization Committee (Kyrgyz-Standard). There should be fundamental differences in the functions of SES and Kyrgyz-Standard: SES should investigate products for their safety, and Kyrgyz-Standard should certify product quality, accuracy in labelling, etc. In practice, however, each of these two organizations has expanded its activities into the responsibilities of the other. For example, Kyrgyz-Standard has equipment to test biological indices and can certify the safety of certain products. The SES fee schedule includes a number of tests (e.g. "sense-based" analyses) that relate to product quality rather than safety.

Preventive inspections of buildings for public use as well as of enterprises are another source of fee-for-service income for SES. This plays an important role in income generation but can easily create perverse incentives that encourage inspections of enterprises that can pay, while reducing inspections of those that cannot (which is likely to be in inverse relation to the need for such inspections). The current economic and fiscal context of the country (i.e. inadequate levels of public funding) contribute to a climate in which SES professionals can easily become diverted from their main objective – protecting public health – to a narrow focus on resource mobilization through fee-for-service activities. The extent to which such a shift in focus has happened is not known with precision, but it is likely that SES managers are devoting undue attention to generating fee income, given their severe shortages of operating revenues from budgetary sources.

Hence, the government budget remains the most appropriate source of funds for the services provided by the SES, which are mostly population-based. . The problem is that the level of funding from this source is low and is likely to remain so for the foreseeable future. This funding can continue to be supplemented with charges and fees for appropriate services. However, the fundamental conclusion is that the only way to enable the resources available to the SES to make a greater impact is to downsize and rationalize the SES system, bringing down its costs and focusing its activities on priority services likely to have the greatest impact on improving the health of the population.

9.2 Resource allocation issues

The organizational units of the SES receive public funds from a variety of sources. Public funds flow to Republican SES organizations (e.g. DSSES, Republican AIDS Centre, Republican Centre for Immunoprophylaxis, etc.) from the Republican budget. Oblast, rayon and city SES units receive public funds from a mix of sources. All SES units develop budget proposals based on norms such as infrastructure, population size, staffing, and historical resource utilization. As with the payment of salary and social fund contributions to all staff of the health system working below Republican level, revenues are centralized through the categorical grant system (introduced in 1997). These appear in the budget as local government expenditures, despite the fact that the funds are provided centrally. Local budgets finance non-staff inputs.

As shown in Table 9.2, however, the level of non-staff funding by local governments for the SES is minimal, as the centralized payments for salary and social fund contributions accounted for 83% of budget spending recorded at local level. This actually understates the availability of non-staff inputs, however, because vaccine supplies are funded centrally and appear in the Republican SES budget (under expenditures for the National Immunoprophylaxis Centre). These supplies are distributed through a vertical structure from the centre to local levels (though local budgets have to pay for delivery and transport of the supplies). Together with the drugs and supplies purchased by Republican facilities (mainly the DSSES), 27% of total government spending by SES is for drugs, vaccines, and related supplies. In addition, a substantial share (reportedly as much as 70% in 1998) is provided through donations by international organizations.

Table 9.2. Local SES spending 1999; by line item

	%
Salaries	63
Social tax	21
Business trips	1
Equipment	1
Drugs	3
Utilities	6
Transportation	4
Other	2
Renovations	0.4

Below the Republican level, the allocation of budgetary resources to SES services is driven largely by the allocation of staff (as suggested by the previous paragraph). The allocation of personnel to SES at all levels is derived from a formula based on the size of the population in each territory (oblast, rayon, city). The formula was developed in 1969 and does not incorporate needs or risk factors specific to certain populations or geographic areas. As noted in section 9.1, payments to staff (salaries and social fund contributions) are centralized and allocated from the Republican level. Local governments are responsible for allocations for non-staff inputs.

Allocations relate not only to the size of the population (and thus to staffing levels) but also to the existing physical infrastructure and historical expenditure patterns. These latter two factors are especially relevant for explaining the level of allocations to Republican SES organizations. One implication of these norms and formulae is that managers do not adjust resource allocation decisions to locally specific needs but instead follow fairly rigid principles. Another critically important implication is that managers have no incentive to consolidate or otherwise downsize

the SES service delivery infrastructure (similarly to the personal health care services infrastructure). Thus, while it is essential for SES to set priorities across its range of activities, downsize its infrastructure, and consolidate its resources, the current arrangements for budgeting would penalize any manager who attempted to do so. Thus, the basis for determining the level of the total budget for SES (especially at Republican level) must be changed from these input and historical norms to some fixed percentage of health or total public expenditures. In other words, the total size of the SES budget must be divorced from any considerations of infrastructure and staffing levels, so that SES managers will not be penalized financially for reducing fixed costs and establishing real priorities for service delivery.

As with other budget-funded public agencies, SES units at all levels of government cannot redistribute money that is specified for a line item (chapter). For example, any unspent funds budgeted for transportation cannot be used to purchase consumable supplies (e.g. reagents). The same rules apply to revenues from fee-for-service activities. Each SES unit must prepare a budget for the next year specifying the expected level of fee income and the plan to spend these revenues, by line item. Any revenues earned above the projected amount are returned to the local authority, as are any unspent revenues for particular line items. These rules create incentives for each SES unit to overestimate projected fee income in order to keep all the revenues. The strict line item control over both budget and fee-for-service revenues severely limits the flexibility of managers to respond to changing circumstances. One way to address this would be to introduce "chapterless budgets", as is being considered for parts of the personal health care services subsector. However, for such measures to have their desired effects, heads of SES at various levels would need to receive training in financial management, and a transparent system for auditing the distribution of funds would need to be established. As with the introduction of reforms in personal health care services, it might be possible to consider implementing chapterless budgeting in a gradual manner (pooling of a few but not all line items) and/or implementing this on a pilot basis in a few localities.

Fig. 9.1 revealed the variation in per capita spending that exists across oblasts. Some reasons for this are that government mobilizes tax revenues and its resource allocation formula for the distribution of public revenues across oblasts. Each territorial government raises its own tax revenues and also receives funds that are centrally allocated by the state in order to compensate those regions that have less capacity to generate tax revenues, and, more generally, to address some differences in need. For example, one aspect of this resource allocation formula is to provide additional resources to territories located at high altitude (presumably because this implies greater need and also greater average cost for the delivery of public services). This might explain the relatively high per capita budget allocation to Naryn (reflected in Fig. 9.1), and this apparent inequality in allocations may, in fact, be justified in terms of need. The specific allocation of funds to each territorial SES unit begins with the preparation of budget proposals, which each SES unit develops based on Soviet-era norms such as infrastructure, population/staffing, and past resource utilization. Because local authorities have the authority to set the level of allocations to the SES, this may be another cause of inter-oblast variation. Local governments review the proposal and adjust the figures according to the expected level of resources expected to be available. Funds are then allocated according to the approved budget.

Hence, one by-product of decentralized authority in the allocation of resources is a degree of inequality across regions in the per capita allocation of resources to the SES. This inequality may be a problem (e.g. the extent of the difference in allocations by Naryn and Osh oblast authorities) if it causes differences in health outcomes across regions. To address this, decisions on the allocation of resources to SES in each oblast could be centralized. However, some degree of

inequality may not be a problem and instead just a difference in the way that each local government authority weighs its expenditure priorities and responds to the perceived needs of the population for which it is responsible. One strategy to address large inequalities while maintaining local decision-making authority would be for government to specify minimum relative expenditure levels for various SES services (perhaps set as a percent of local government spending). Each local authority would have to comply with these minima but would be free to spend more based on locally perceived needs. The risk of such an approach is that the local governments would set the minimum as a target and not go above it. Hence, any such recommendation should be treated cautiously and be subject to greater study.

10. Human resources and training

10.1 Numbers of staff

The SES is provided by mainly SES physicians and SES feldshers who are trained for the SES system. Additionally, some unqualified support staff contribute to the service provision. This results in a total of 3510 staff comprising 771 physicians and 1729 nurses and feldshers. Thirty per cent of the staff constitute the support staff such as drivers, auxiliary, accountants, etc.

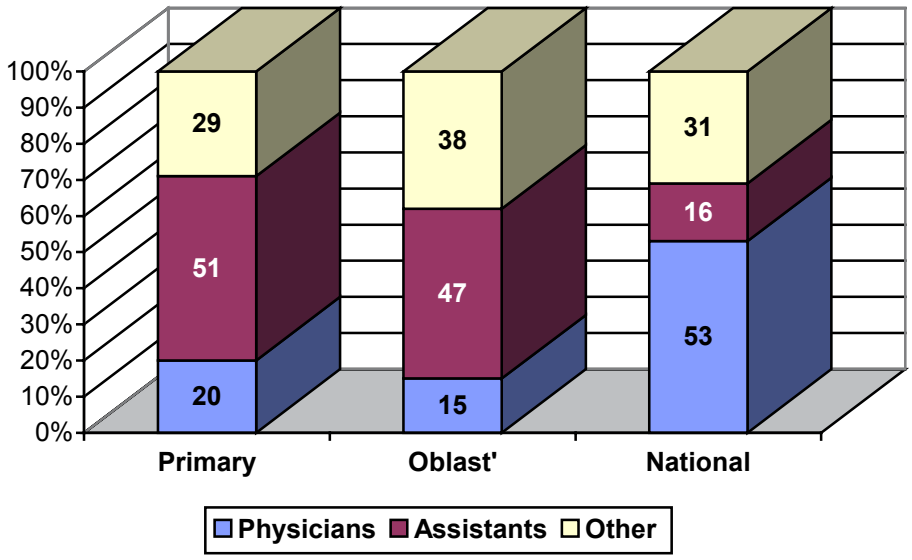
The staffing is determined according to the norms developed in 1969 during the Soviet period. They are based on the population, but they do not take into account the morbidity and mortality patterns, general characteristics of the region (such as industrial development, environmental risk factors, intensity of enterprise development). Furthermore, it should be noted that considerable changes have occurred in these aspects of the country since these norms were issued.

According to these norms, there are 4834 staff posts established, of which 1202 are for physicians and 2406 for nurses and feldshers. As seen, 73% of the staff posts are filled. Although there is a vacancy of 27% in the existing established posts, it has been noted, that since the current norms are outdated and do not reflect the workload of the current practice, this does not result in a lack of staff. On the contrary, there is a room for updating and, therefore, rationalizing practice which will free some more staff time or lead to its more effective use.

The SES physicians are specialized in various areas such as sanitary hygienists, epidemiologists, bacteriologists, parasitologists. These specialists are employed at every level of SES services. Even at the primary level, specialists have vertical responsibilities according to their specialization. This results in employment of at least 7–8 physicians even at the most peripheral SES facility. There is room to rationalize the staffing by employing more generalists at the field level, allowing them to have a good overview of the area for which they are responsible. They will therefore be able to understand the public health problems better, and prioritize them when designing solutions. The more specialized staff employed at the national level can undertake more detailed nationwide analyses, and work on the development of guidelines.

Responsibilities are shared between physicians and assistants by data collection being carried out by the assistants and the analysis and decision-making by the physicians. Currently, the ratio of assistants varies at different levels, being 2.5 at the primary level, and 3.2 at the oblast level. It is possible to increase the number of assistants at the primary level and to increase their responsibilities by involving them more in population education.

Fig. 10.1. Distribution of SES personnel by education



10.2 Training of SES staff

The staff of the SES system are trained in the Medical Academy and Medical Schools. SES physicians make their choice when they enter Medical studies and start at the Sanepid faculty (recently renamed as the faculty of prevention or medical prophylaxis). They used to have a six-year training, the first four years of which were together with the students in the treatment faculty. In the last two years they were more focused to epidemiology and sanitation. As it was considered that the clinical topics could be reduced, a new curriculum was introduced in 2000 for a five-year training with earlier introduction to the specialized topics.

Another group of SES staff are the SES feldshers (SES assistants) who are trained in the medical schools through a three-year training programme. They assist SES physicians in their daily work.

The curricula and training of SES doctors and assistants are in desperate need of complete overhaul. The Dean of the SES Faculty recognized the need for revision and initiated a re-design based on the premise that the faculty should be training SES doctors over five years for more generalized skills, with an optional sixth year for those desiring further specialization. The bases of the curriculum redesign are unclear. The new proposed curriculum does not reflect modern public health principles, practices, or methods. The curriculum needs major review, restructuring, and revision with substantial international technical assistance. For example, current course content presents epidemiological analysis methods that are limited to mostly basic descriptive statistics. We saw no examples or evidence that epidemiological methods were being used or taught by SES that would be considered conventional by international norms (such as case-control analyses, cohort analyses, data modelling).

Continuous education

Continuous education has been provided by the continuous medical education centre in Bishkek and the SES staff are also subject to retraining every five years like other health professionals. However, the regularity of this training has been interrupted owing to the financial problems faced in the last decade.

10.3 Management of SES staff

Motivation

The SES staff are paid on the basis of salaries according to the national pay scale and like all other health personnel they also suffer from the very low level of salaries. This leads to lack of motivation, but nevertheless it has also been observed that the SES staff maintain their enthusiasm and responsibility for health protection under all difficult circumstances.

It is crucial to introduce some incentives to the SES staff. The limited resources, itemized budgetary mechanism and centralized earmarked salary fund do not allow much flexibility in this respect. However, the national salary scale and payments mechanisms for the civil servants in other sectors can be explored and the possibilities for additional hardship payments (if they exist in other sectors, which the mission did not have time to explore) may be considered for applying to the SES staff.

In addition to the reimbursement-based incentives, other types of incentives should be explored such as provision of housing, and further education possibilities.

Workload and job descriptions

SES doctors at all levels complained about their workload and felt that some of their duties could be performed by epidemiology assistants. However, they were reluctant to relinquish the responsibilities because the levels of education and experience of assistants were reported to be low. But some responsibilities, in reality, could be performed by properly trained assistants rather than by doctors.

Some of the extra workload arises from the duplications of tasks by the primary care staff, SES staff and others, such as staff of TB dispensaries. Clear description and delineation of responsibilities among them could significantly reduce the workload and increase efficiency. Furthermore, some outdated practices also cause unnecessary workload which could be reduced with the revision of practices and the prioritization of services.

Career development

SES staff are specially trained for the SES system and their career development occurs within the system. Although they have some possibilities of working at hospital laboratories, etc, they have limited flexibility of working in different environments. The financial constraints in maintaining continuous education also stand as a problem in career development.

Performance evaluation

The philosophy and approach of control is even used within the three hierarchical levels of SES itself, with the higher level actively “controlling” the next lower level to be sure that all prikazes are followed. However, SES staff are not fined for lapses in adherence to prikazes. For example, outbreak investigations are the responsibility of the rayon-level SES doctor. Their work is reviewed at the oblast level while the oblast review is reviewed at the republican level.

Hyper-scrutiny and over-controlling of the work of others is very labour intensive. It appears that the underlying principle of this approach is a basic mistrust of the interest, capacity, or abilities of the other segments of society (including their own staff) to perform their jobs well or to fulfil their roles and responsibilities. Appropriate rationalization of services and personnel will require

an evolution in thinking in the SES more toward roles of partnership, leadership, technical support, and good stewardship.

Issues to be considered

The training of SES staff needs to be revisited. The training strategies need to be considered as well as the content of the training.

Prior to the content discussion, it is necessary to decide whether to continue to train specific staff for SES through undergraduate training or introduce it as a postgraduate specialization. At this point, there is a policy issue which requires high-level decision-making in accordance with the social and human resources policies in the country. The question to be answered is whether the human resources strategy in the country is to train multifunctional staff at the undergraduate level, who could have various job opportunities and be adaptable to later changes in the system, or to train specialized staff for specific purposes and posts at the undergraduate level. Each strategy has different advantages and disadvantages, and a policy decision needs to be taken.

Another policy decision to be taken is whether it is intended to make medical education compatible (and accredited) with other countries in the west and to open the borders for the physicians of the Kyrgyz Republic.

Decisions on these questions may lead to decision-making on whether or not to maintain the separate training of SES staff at undergraduate level.

The second issue is the content of the training. However, to appropriately design a new curriculum, there are critical preceding steps. First, there needs to be a new vision for the functions of the SES. Once SES functions have been revised, then the necessary qualifications and experiences needed to perform those functions can be determined. It would be important to know the baseline level of knowledge of SES participants prior to training. International experience can guide curriculum development but some new approaches might need to be pilot-tested before implementation. It will be important to reform the SES system and SES training in parallel. A train-the-trainers strategy might be useful. At this point in time, it may be more important to undertake a serious, comprehensive re-training of existing SES doctors and assistants before embarking on producing additional new SES doctors for a system that already has overcapacity.

11. SES and clinical services

In the Kyrgyz Republic, comprehensive reform activities have been undertaken through the MANAS health care reform programme for restructuring health care system. Strengthening of primary health care has been the main thrust of the efforts through the establishment of family group practices (FGPs). The underlying aim is to introduce a comprehensive primary health care approach moving away from a disease oriented curative approach towards health-oriented services which embrace promotion and prevention. This brings a need for closer work with the SES.

Traditionally, the SES system has been organized vertically and the link between the SES and clinical services has been quite weak.

However, the primary function of the SES appears to be to “control” many sectors of society i.e. scrutinize and critique the work of others and then penalize them when the work does not conform to a rigid set of procedures and practices that have been formulated and imposed from the national level in the form of “prikazes” (regulations/directives). Many SES personnel proudly refer to themselves as “civil police” or “sanitary police”. In epidemiology, for example, local rayon-level SES doctors review the medical records of patients in hospital to assess whether the treating physicians followed the required time intervals for the referral of patients from the outpatient setting to inpatient care or followed required intervals for initiation of specific treatments. Outpatient medical records are reviewed to identify children who are not immunized within one day of their birthday. Physicians who do not comply with the required procedures are fined by SES.

There is a need to change the nature of this relationship from control to partnership. There are a number of opportunities for better coordination and integration of the work of the SES and primary care. If the responsibilities are clearly defined and the necessary mechanisms are put in place, this could be achieved. There is such an attempt in the area of immunization where the SES provides the logistics and the FGPs administer the vaccines. However, there is a room for improvement, since the SES continues to maintain its controlling attitude, as described above.

It is important to develop mechanisms for the SES and the clinical services to work as peers. The potential exists for them to do planning for health protection activities jointly (rather than the SES to provide regulations) and to implement these plans jointly. The SES has the experience and skills to do overall monitoring and primary care has the advantage of being close to the population in delivering its services. Primary care can also play an important role in public education. Such an arrangement has already been ensured in the control, diagnosis, treatment and notification of the STIs as mentioned in the epidemiology section. On the other hand, there is a need to review the responsibilities in case of TB. When a patient is diagnosed the responsibility for contact tracing lies with the FGP, and the TB dispensary and the SES, that is they all define the same function. The SES has the additional functions of disinfection (whose effectiveness is subject to discussion as mentioned earlier) and controlling the others including the treatment practices of the clinicians. The duplications here can easily be avoided and the workload of each facility can be rationalized.

School health and routine occupational check ups are also other areas where there is a relationship which can be reconsidered to avoid duplications and to ensure better cooperation.

As the discussions on integration with primary care goes on, one idea brought into the discussions has been the employment of an epidemiologist or assistant in the FGP with such responsibilities as registration of infectious disease morbidity in the area served by the FGP, investigation of contact persons of such infections as typhoid fever, meningitis, diphtheria, and informing the SES about every case of irregularity – accidents, breakages or interruptions - of the water supply systems.

Though the objective of such an approach is to integrate and optimize the epidemiological functions of the SES with the FGPs, another expectation underlying this proposal was the possible benefit of linking with FGPs which receive some financial incentives from health insurance. However, the current resources of the health insurance fund will not allow significant incentives, as discussed in section 9. On the other hand, such an approach would require a considerable increase in the number of SES staff and it is questionable in terms of efficiency and effectiveness. There are possibilities that the SES staff at the rayon level could have more

integrated responsibilities, rather that vertical specialized responsibility, and work more closely with the FGPs. There is a need to seek other incentive methods for SES staff.

Retraining of clinical specialists to become general practitioners represents an acceptable short-term strategy to address severe health sector human resources problems in the Kyrgyz Republic. However, numerous questions were raised as to whether FGPs were receiving sufficient training. For example, responsibility for immunoprophylaxis is being transferred to FGPs. However, Republican leaders complained that FGPs knew very little about immunizations. In reality, only sufficient resources have been devoted to training in immunoprophylaxis for approximately 10% of the FGP physicians. It is important that appropriate training precedes full implementation of new policies. To its credit, the Kyrgyz Republic has committed itself to a longer-term solution to the health sector human resources problems by instituting a formal programme to train family physicians to specialize in primary health care. The Republic has selected an excellent source of international technical assistance for the development and implementation of curricula and practical training in family medical practice.

Though the need for training is emphasized, it should be noted that there are missed training opportunities. As the intensive retraining programme for primary physicians to become family physicians is being undertaken, it is possible to integrate the necessary training on the subjects relevant to disease prevention into the ongoing training. Although the physicians in Bishkek, Chui and Issyk-kul have completed this training, there are still opportunities for considering this in the training of physicians in the rest of the country. This would allow for better functional coordination and integration between the SES and FGPs.

12. SES and the Ministry of Environment

Special attention was given to the division of tasks and co-operation between the SES and some public administration sectors outside the health sector. Some critics have been saying that the activities of the SES and the other sectors are overlapping and duplicate.

Ministry of Environment

The Ministry of Environment protects the environment based on recent legislation. At first sight, the goals of the monitoring activities of the SES and the Ministry of Environment are similar. However, the SES focuses on issues related to human health, whilst the Ministry of Environment on the environment itself. Both work with the control of radiation and control of chemicals.

Table 12.1 was compiled in discussions with representatives of both authorities, and in some cases with the Ministry of Agriculture. It shows that there are only few overlaps: monitoring of mining tailings, radiation in general and the soil.

A good example of effective cooperation had been a cyanide accident some years ago. Both authorities engaged in a successful joint operation and even produced a joint report on the case.

The fact that the two organizations have divided their tasks and targets mainly in a consistent and rational way, does not take away the potential efficiency gains which can be achieved from sharing the more expensive and rarely needed pieces of equipment. Such sharing is not part of the culture in the country – not between the SES and other sectors, nor even within the SES.

Table 12.1 Monitoring of the environment by the SES and the Ministry of Environment

Target	SES	Ministry of Environment
Drinking-water	Yes	No
Sewage water	Only in epidemic situations	Yes
Household waste safety	Yes	Only when related to landfills
Industrial wastes	No	Yes
Mining tailings	Some monitoring	Yes
Toxic wastes	No	Yes
Ambient air	Yes (in special circumstances)	Yes
Indoor air	Yes (workplaces)	No
Pesticides	Yes (in soil, water and food)	No (done by M of Agriculture)
Groundwater (as such)	(Geological Agency)	No
Surface water	Yes (if used as drinking-water)	No
Swimming water	Yes	No
Use of fertilizer	No	Ministry of Agriculture
Radiation	Yes	Yes (but only gamma radiation)
Soil	Yes (for microbes and parasites)	Yes (for chemicals)

The laboratory network of the Ministry of Environment is much smaller than the SES network. There are main laboratories only in Bishkek and Osh. Smaller laboratories operate in smaller centres, but those laboratories have not been accredited. The local inspectorates have no labs.

In Bishkek during the first quarter of the year 2000, the environmental monitoring laboratory analysed about 60-100 samples (100-150 separate analyses) per laboratory department. These were mainly of soil, water and outdoor air.

13. Discussion and conclusions

General conclusions

1. The health status indicators for the people of the Kyrgyz Republic are worryingly low in international comparisons. During the 1990s the health of the people has even deteriorated in many important areas. Infectious and non-infectious diseases and accidents build up the burden of diseases. A considerably large share of the burden is in principle preventable or amenable to interventions.

2. The underlying factors behind both the low status of health and the deterioration of health are in the unfavourable economic and social determinants of people's life. The same factors make prevention and health care interventions difficult.

3. In spite of the underlying causal and contributing factors being outside the health sector, the need for developing effective and efficient public health – both in terms of health promotion and health protection – is imperative. This review has been about the main organization working on health protection, the Sanitary-Epidemiological Service, SES.

4. Every country and every health systems needs effective health protection. Organizational profiles are different. As a rule, clinical health services have a much more important role in prevention and health protection than they do in the case of the Kyrgyz Republic.

5. The SES has inherited its structure and functions from the model shared by all the republics of the former Soviet Union. It is a very bureaucratic top-down command and control organization. Similar organization solutions have existed in all industrialized countries. These

countries – one after another – have since the 1980s reformed and restructured such organizations in many sectors of public services. The aim has been to create efficient structures and functions, which are decentralized and build on the quality and standards of work of the professions and grassroots level organizations with much more discretion to decide how they do their work.

6. Health protection is an area, where legislation and formal regulations have an important role. This is because health protection organizations and professionals usually have been given exceptional rights to interfere with the operations of enterprises and even people's life. In the Kyrgyz SES and its regulations all proceedings are precisely stipulated down to the smallest detail. The SES engages in formal controlling and even penalizing of clinical services in a way that is most inappropriate and detrimental to the development of necessary flexible co-operation and partnership. The SES should be firm in inspecting and controlling for example water or food safety. However, controlling the doings of clinical health professionals is not a necessary nor a constructive part of health protection. A good example for SES personnel and clinical staff to cooperate in a close partnership would be in the detection and control of intra-hospital infections. In the current system of control and penalties, there is a strong disincentive for clinicians to be alert to, detect, or report cases of intra-hospital infections which, if continued could threaten the health of any hospitalized patient. However, the hospital should have the most important role in detecting intra-hospital infections. A true partnership approach would then take advantage of the expertise of SES staff in identifying potential causes of intra-hospital infections and of the clinicians' knowledge and desire to have the best clinical outcomes for each of their patients.

7. Inside the organization of the SES itself, the rigid universal three tier structures are a major potential source of inefficiency. The organization employs much human labour in controlling by the superior levels and in detailed reporting by the lower level organizations. Through adoption of modern efficient management principles a substantial share of this non-productive activity could be reduced.

8. The SES employs a large number of staff. A cautious comparison with several European countries indicates that there are about 2–2.5 times more staff per population in the Kyrgyz Republic. The review team sees many ways to make the organization leaner without compromising the ability of the SES to perform its essential functions.

9. Given the economic realities in the Kyrgyz Republic now and for the foreseeable future, the possibilities for the SES to really do all the tasks properly it has either set for itself or has been set by legislation, are not good. Therefore the SES should start a determined, albeit painful, process of prioritizing its functions and structures. We shall point to areas and activities where more effort and input would be needed and also to areas, which could and should be regarded as lower priorities. We believe it is generally more constructive to speak of lower priorities than get into arguments of what actions are necessary or unnecessary.

10. The relationship between the SES and the clinical health services seems problematic in several respects. First of all, there is no need to demarcate health protection organizationally from clinical services as sharply as the SES now does. Both are essential actors in the health sector. They should co-operate, share facilities, equipment, expertise and information in the interest of the people they both serve. In the preparation of the Kyrgyz Health II project, we have seen that the common goods and goals are easily subordinated to defensive positions taken by the SES about the placement of activities, equipment or staff. We could envisage an entirely different outlook by the SES concerning the preservation of all of the present structures and

functions. If the SES could be assured that the savings achieved through efficiency-enhancing structural and functional changes would be used for the improvement of the SES working conditions, necessary reforms could become easier to implement.

Conclusions about the key functions of SES: Epidemiology

11. The most problematic functions of the SES we find under the heading of "epidemiology". As indicated in section 5, the notion and content of epidemiology are disproportionally oriented to actions launched by individual cases of infections. On the level of individuals, the SES itself has taken on tasks, which should belong to the clinical services. There have already been successful transfers of traditional SES tasks to the clinical services in the area of sexually transmitted diseases. These experiences should show that the clinical services are ready for the expansion of their roles. At the same time, the potential of epidemiological expertise and methods applicable to the health problems on the level of communities and populations is not, to the best of our understanding, used anywhere near fully. This is a training question and a question of daring to give up outdated practices and adopt new tasks instead. It is also a question of how new practices are learned and adopted.

12. The SES should shift the focus of its attention to the aggregate level of occurrence of infectious diseases. It is still spending a sizable part of its time on activities launched by commonly occurring self-healing infections – such as common gastroenteritis. Patients, and especially small children, may need attention by clinical physicians to make sure that the healing takes place safely. SES should develop new community and population based approaches instead of trying to study infections case by case. The abundant mass of information collected now by the SES should be reorganized to serve the purposes of such analyses and monitoring.

13. Withdrawal from excessive investigation and controlling of events around individual infections and withdrawal from inappropriate controlling of the activities of the clinical services will liberate work input either for other SES purposes or for general savings, if the employees can be moved to other tasks.

14. To ensure the adoption of proven modern effective and efficient practices in "epidemiology", the systematic following of international literature and material now available on the Internet should be organized. International cooperation and assistance is also necessary. The whole Kyrgyz health sector, and many activities inside the SES or related to the SES show the utility of such cooperation. Good examples of this can be found in the fields of combating AIDS, sexually transmitted diseases and immunoprophylaxis. One of the best examples of good results is the practice of preventing hospital infections in Bishkek City hospital number 4. This hospital has developed its intra-hospital infection prevention programme through an international cooperative project.

15. Some infections or groups of infections requiring priority attention would be best approached through wide multisectoral action: Brucellosis, sexually transmitted diseases, waterborne gastrointestinal infections, hospital infections and hepatitis would be good examples of such infections. The SES should be able to mobilize the appropriate expertise within its wide sector of epidemiology to lead these actions. Simultaneously, the SES should have the courage to regard some infections as lower priorities. Except in small children, uncomplicated acute viral respiratory illness or uncomplicated acute common diarrhoea, do not deserve or need much attention or action from the clinical or the SES side. Parasitic infections are a problem in the country, but they are much dependent on the water supplies. Spending time and resources on screening otherwise healthy children or all hospital patients is not logical: what is the appropriate

intervention if parasites are found – to treat the patients and wait a while for the same parasites to re-appear?

16. The Anti-plague station is itself an example of a type of necessary and useful special expertise and special laboratory unit – so long as the coordination of its laboratory and expertise services with other special units is carefully designed. The practice of sending expeditions to identify plague in the fleas of marmots in the mountains is neither a cost-effective nor a cost-efficient method of plague control. Much more economical approaches are used in countries with very similar rates of natural occurrence of plague, for example in some states in the United States.

17. The organization of prevention, detection and care of tuberculosis seems to have undergone changes, which the team finds to be good examples of the general direction of change also needed in other sectors. There are still some questionable “anti-epidemic” measures in operation - for example chemoprophylaxis of all household contacts of TB patients even though the contacts may have entirely negative TB screening tests. Another example of a questionable practice is the disinfection process of TB patients’ homes, clothes and bedding.

18. The present SES system of data collection and emergency notification of infectious diseases appears to be one of the stronger activities of the SES. The annual statistics appear to be carefully collected and annual reports prepared. It is widely acknowledged that there is under-reporting of information about infectious diseases of real public health significance. SES also collects and reports other information, some of which is much less useful or relevant to public health and therefore further review and rationalization might be needed.

According to the national strategy of health information development, the Medical Information Centre is developing a comprehensive system for extracting information from clinical services. This information will include core data about infectious disease. The service should be in operation in 2–4 years from now. It will produce aggregated data on the infections with a reasonable lag of about 1–2 months. Building a separate computerized information system for the SES to monitor infectious diseases is not advisable. Planning should be undertaken to integrate SES data collection needs into the computer system of MIC. The SES should build capacity and expertise at the oblast level to analyse data derived from the MIC data, from clinical and SES sources, in order to be able to identify and respond to local health problems and needs. In addition, the SES needs to increase capacity and expertise at the republican level to perform more detailed analyses of the data that will be coming from the MIC system.

An interim plan for collection and reporting of rationalized SES information will need to be developed and implemented to cover information needs until the MIC system is fully implemented. Use of simple spreadsheet software with email transmission may be sufficient. The design of the MIC computer system will be very important in order to continue to meet the information needs of SES at the oblast level in a timely manner. There may be need for small, SES-specific, databases within the MIC computer system for collection and collation of information not available or not collected from clinical services but that are important to enable the SES to continue to perform its public health functions. For example, information derived exclusively from clinics and hospitals reflects the problems of those who seek and receive clinical services. Information derived exclusively from users of clinical services may not accurately reflect the full epidemiological picture of an infectious disease in the population as a whole.

19. In the preparation of the Health II project there is a proposal to equip the SES offices on all levels with computers and e-mail and Internet connections. This office technology is justified as such for the proper operation of the SES. It does not need to be directed to fast statistical reporting. The main arguments in favour of investment in this office technology are: the reorganization of many labour intensive manually performed work processes; the usefulness of e-mail and internet connections as such; and the usefulness of computers in keeping the SES statistics.

20. To make true use of the aggregate epidemiological data, an appropriate unit for analysis and interpretation would be needed. During the review no such unit seemed to be in operation, nor were there any detailed plans for establishing such a unit. Such a unit would need well-trained modern epidemiologists, with the necessary statistical and mathematical tools and hardware. Establishing such a unit should be a high priority. Savings from the present patient level activities in epidemiology could be partly used for funding this unit. The unit should be shared by all users of epidemiological knowledge and expertise: health protection, health promotion and clinical services. This unit would be responsible for special studies on the statistical material and also for population or patient studies. In the Kyrgyz culture of organizing the health sector, it would obviously be necessary to place this unit on common ground under the umbrella of Public Health, not inside any existing organization.

Conclusions about the key functions of SES: Sanitary hygiene

21. Unlike epidemiology, sanitary hygiene does not raise similar fundamental questions about its basic operations. The scope of activities and attention is very wide. The main conclusion for sanitary hygiene would be to urgently prioritize the problem areas and the necessary activities of the SES. The targets of high priority should get more attention, human labour input and also funds. Water and food safety would rise above everything else to the top of the priorities list in the eyes of the review team. In both these areas the potential of SES is much limited by external realities: availability and condition of water-pipe systems and sewage, reshaping of food production, sales and catering. To draw attention to the underlying structural problems, SES should develop its statistics to show the differences between populations served by water-pipes and populations using open water. SES would also be the right expert organization to reveal through its investigations the occurrence and distribution of various problems in the waterlines which lead to contamination of the initially clean groundwater.

22. Prioritizing would also necessarily lead to reduction of attention to some of the traditional targets of sanitary hygiene. The team has identified the hygiene of schools and kindergartens to be one such example of lower priority. These institutions need ordinary checking and inspection of the safety and hygiene of their facilities. The superfluous involvement of the SES in the way schools are run or in how school health services perform their tasks could be discontinued without harm. Also, in the area of occupational hygiene there seems to be scope for rationalization of the frequent health inspections of workers. In both areas, studying how similar activities are arranged in other countries outside the SES tradition would be useful, because those countries have actually had similar traditions in the past, but they have given them up or reduced them without any harm.

23. The present dilemma around the government decree limiting inspections should be examined very carefully. It was not possible for the team to get a full picture of why the decree was issued. Anecdotal accounts pointed to the possibility of the SES being perceived as having a special interest in frequent inspections owing to the formal or informal fees from enterprises. It would be inappropriate to let even formal and legal fees act as incentives in such a way. It would

be extremely condemnable and dangerous if illegal fees would have a major role in the inspections. The problems of incentives are discussed later, but the international experience of collecting fees suggests that a fixed annual (or similar) fee covering an agreed minimum number of inspections (the number being adjusted to the type of business of the enterprise) effectively neutralizes unwanted incentives. But, on the other hand, any health inspection system must be able to operate using unannounced inspections. Otherwise, the whole basis of inspecting changing hygienic circumstances in the markets, shops, cafes and restaurants is lost. Therefore the whole decree should be reconsidered. New contractual models guaranteeing the interests and needs of both sides can be used instead.

24. The State Veterinary Institute is responsible for the safety of animal-based food until it reaches the market. The SES has the responsibility after the goods are on the market. Both the SES and the SVI should develop joint projects to tackle the biggest problems in food safety instead of simply dividing the tasks. There would be several areas of common interest – for example in the prevention of brucellosis.

25. For iodine deficiency the basic cost-effective method of salt supplementation exists. The capacity to iodize all the salt sold in the country will soon be in use. Nevertheless, owing to leaks in the control of sale of salt, the mere availability of iodized salt is not enough. Actions would be needed on several fronts: raising public awareness, giving support, subsidies, tax-reliefs, etc to the industry involved in iodization, using strategic targeting in the worst iodine deficiency areas in the form of special supplements to children, making sure that mass catering in schools and workplace lunch cafeterias use iodized salt, etc. Eradication of iodine deficiency should be seen as a high priority issue for public health. It is actually a classical case for public health action; an effective and, on the national scale, even inexpensive, remedy exists. The effects of deficiency can be serious and lifelong. Individuals or families do not directly perceive the importance of choosing iodized salt, but the full picture is clear on the population level.

26. Radiation control is in the hands of too many authorities. A clearer division and coordination of tasks is needed. The SES should withdraw from routine measurement of mining tailings and uranium deposits, since the Ministry of Civil Defence is and should be in charge. The best role for SES would be to approach the mining tailings from the direction of research: what are the health effects, what are the effects of the protective measures used? Radiation control and monitoring tasks should be further coordinated with the Ministry of Environment. Too much of the case of need for coordination is countered with arguments about which organization has the best equipment or skills. The right way would be to analyse the types of tasks and general areas of expertise. This would result in the SES keeping the responsibility for radiation hygiene in health care facilities, for building materials and imported materials, in the interest of human health protection. Usually, the problem of radon in environments where people live is a typical challenge to health protection; therefore the SES should be in the lead in mapping the radon problem in the country.

Conclusions of key functions: laboratory services

27. The general state of most local level laboratories, both SES and clinical laboratories, was surprisingly undeveloped. The team repeatedly had to stop and wonder why there is a paradox between what the regulations say and what seems to be actually done in the laboratories. Several prikazes rule that laboratory investigations should be made in numerous situations of contacts with infectious patients, of many objects in the area of sanitary hygiene. Yet, the numbers of investigations were surprisingly low in any respect. After learning that the same SES laboratories are, in fact, also in charge of the clinical microbiological studies for the FGPs and hospitals, the

paradox grew even bigger. For some reason, laboratory services are not being used to an appropriate degree. The reason might be the short supply of certain important reagents. The patients of clinical services face surprisingly high user fees for ordinary laboratory investigations. Only those who have received a special voucher from the municipal authorities are free of these charges.

28. The interface between the SES laboratories and clinical laboratories (usually situated in the hospitals) is problematic. The team received the following figures on how responsibilities are divided for analysing samples related to human infection: in 44 instances the clinical services use SES laboratories and in 14 instances the SES uses hospital laboratories. For the rest, both sides have their own laboratories. There are also some oblast central hospitals which do not have their own clinical microbiology laboratories. Seen from the clinical side, the microbiology work of the hospitals and ambulatory care seems to have suffered from not having the laboratories attached to the clinical services. The laboratories complain that the clinicians are not interested; they do not really know how the laboratories work and what investigations to order to get the optimal results. Looking at the wider picture, it should be clear that the needs of the clinical services should in any case be the first priority in infection diagnostics. The investigations made for the support of SES activities are about checking samples from contact persons, about ruling out infections. On any longer term perspective, the right place for human infection microbiology should be in the realm of clinical services. The present divide must be a peculiarity of historical development, and it should be corrected in the near future. What this would mean in concrete terms would have to be reviewed in detail rayon by rayon and oblast by oblast.

29. If microbiology investigations have to be divided for practical reasons, the divide would be less problematic if the services for sanitary hygiene were in one place and those for human infections in another place. This is far from the optimum, which would simply be to have one microbiology laboratory for both SES and clinical services in places with rayon or oblast SES offices. Bacteriology as a laboratory sector is – contrary to most other sectors of laboratory work – still very much about manual operations. Automated analysers have rationalized work in clinical chemistry, biochemistry and many other sectors, but not in bacteriology. Therefore, tolerating the divide between the sanitary hygiene laboratory investigations and human infection related infections would be possible. Sanitary hygiene laboratories have their own special fields in the chemical and physical analyses, which are not linked directly to human infections.

30. In the sector of virology there is now a plan to equip two national centres to the level of higher modern expertise. These centres would be in Bishkek and in Osh. The reason for having two centres instead of only one are in the special geographic and transportation circumstances of the country, which is divided by the mountains into North and South. Concentrating most virology investigations in this way, except routine exclusion investigations for HIV and hepatitis, represents a good example of rational and efficient structural design.

31. Having sanitary hygiene laboratories in each rayon and oblast seems necessary as such. However, there are already good examples of smaller scale “specialization” of some rayon laboratories into some special analyses. Similarly, oblast laboratories are responsible for certain analyses requiring special skills or equipment. Moving ahead in this direction would help the structure to become both efficient and also responsive to the wide variation of needs in different types of communities. Some rayons need different sets of analyses for occupational hygiene from others.

32. Dividing the development needs into two groups – human infection related and sanitary hygiene related investigations – makes the challenge for consolidating the laboratories more complex than the team expected. There would appear to be no simple guidelines on how to proceed. The consolidation plans would have to proceed on a rayon by rayon and oblast by oblast basis. In any case, it should be ascertained that new investments will only be made in laboratories, which will be in operation in the foreseeable future.

33. Certain laboratory functions on the national level are unclear and duplicate. Without trying to present a truncated structure where all excess capacity and duplication would be stripped off, the best way to proceed would be to organize all the present national level laboratories under one organizational umbrella. In doing this, all functions, all equipment and also all special staff skills, would have to be carefully assessed and recorded, and the new design should be as structurally efficient as possible. This process would obviously lead to many tensions between the existing units, but the consolidated outcome would yield clear efficiency gains. This consolidation is linked with the need to consolidate the present special centres under the SES administration in a more efficient way (please see point 36 later).

Conclusions on the general structures of SES

34. Moving away from the present rigid command-and-control system would be very advisable. Understandably this cannot be accomplished overnight, but through a longer series of gradual steps and introduction of new ways of management. The team would propose that external organization design and management expertise is used over a longer transition period for this purpose.

35. The present prikazes covering the activities of the clinical services and the SES itself should take a new shape: instead of ruling precisely how the professional staff must proceed in every conceivable situation, the prikazes should stipulate the duties and the responsibilities, along with the expected outcomes, but should leave much of the means of how the professionals fulfil their responsibilities and achieve the expected outcomes to individual and local discretion.

36. Administration & management of the SES are currently linked to expert services and special national services. This has been, and in many countries continues to be, a common pattern, but it is another source of inefficiency. Therefore we propose a new vision, based on separating the two sets of functions and assembling the national non-administrative functions together under one organizational umbrella, which would give many benefits and structural savings. The vision is based on separating the functions of (1) administration and management of the SES from (2) national level expertise services and direct services to the field. This would result in an all new umbrella organization, which could incorporate the whole field of Public Health expertise under one organizational roof. In the beginning, for practical reasons, the different units would probably need to reside for some time under separate roofs. This would enable the combining of health protection and health promotion and also the sharing of important facilities. Many details of these visions may need to be further discussed. At this point it would be important to realize that this design should be seen to promote the general interest of the health sector. On the side of clinical services there are many similar needs – for example for special laboratories or for epidemiological services – which should be incorporated into the planning. Combining a new centre for health care management has been proposed. There is no reason for such a centre not being added under the same roof after its role and relationships with other functions, and also with the academic centre in the Kyrgyz Medical Academy, have been defined.

37. Keeping in mind the typical size of the catchment population for the rayon SES offices, the present structure of having one office for each rayon is – in spite of some hesitations – still the best. This does not mean that all SES offices should have a full laboratory. Questions arise about the best functions of the oblast level, or of the interplay between rayon and oblast levels. If command-and-control is made leaner, and the laboratories restructured, a much leaner but sharper oblast level would be the right policy.

38. Creating efficient structures requires admitting that it will not be cost-efficient to try to maintain maximally the full spectrum of services in each SES rayon office or in each laboratory. This principle is commonly accepted inside the SES and the future plans are built in many respects on consolidating services and thus using resources wisely. To ensure that the consolidated services operate properly, flexible transportation systems will be needed. It seems to be a common opinion that everything that needs to be transported – be it goods or people – will get done in the current system, which is built on common and shared knowledge of who will be travelling where and when. In future, more systematized and optimized systems of transportation will be needed. Even regular weekly schedules could be used for the busiest routes. There is excellent computerized software available for optimizing transportation. In the future, when the SES offices are computerized, such systems should be employed.

39. The team reviewed the proposals for merging SES offices and FGPs, or placing individual SES employees into the FGPs. There are many areas where good co-operation and partnerships will be very useful. Before entering such partnerships, the present practices of "police-like" controlling of the health services must be discontinued. The team does not recommend any major formal restructuring, merging or placing of SES staff into the FGPs. In future, after the revision of the functions of epidemiology, the epidemiology specialists will have new roles, which will be useful both for FGPs and also for the hospitals.

Human resources and training

40. The future of training of sanitary physicians, who are the highest trained professional group in the SES, looks uncertain. The interest of young students in entering the field has diminished. The main reason for this is said to be in the gloomy earning prospects. The curriculum for this training has been recently revised to reflect better than before the present field of work of the SES physicians. However, in the future more fundamental policy decisions need to be made: will the training be kept as undergraduate training, or should the SES receive its highest trained experts through postgraduate training? The scenarios of this report underline the need for demanding skills in epidemiology and in general methods of SES. In any case it will be important to reform the SES functions and SES training in parallel.

41. The current practice of placing the SES staff firmly into the subdivisions of the SES introduces a source of inherent inefficiency on the rayon level. It would be quite simple to start systematic training of newcomers to SES towards "generalism". There are important lessons to be learned from primary medical care: primary care services are run by generalists, secondary services by specialists. Efficiency gains would then come from being able to reduce the numbers of SES physicians in the rayon SES offices and concentrate those with the highest training and special skills to the oblasts.

42. The review team could not assess in detail the work profiles of the relatively large numbers of SES assistants. The general direction recommended in this report – less action around individual patients with common infections, more focusing and prioritization in all the SES services – would in any case enable reductions in the present numbers of assistant workers.

Financing

43. The overall funding of about US $0.30 per capita is far too little to run an effective health protection service. Therefore it is understandable that all sources for financing are explored. However, there are no viable alternatives to the basic method of financing the SES from the public budget. Budgetary funding is actually a very consistent pattern across countries with different social and political systems and also across various levels of economic development. Instead of trying to find financing sources from outside the budget, it could be possible to rethink some basic features of the SES duties. In many western European countries health protection organizations used to be engaged and burdened with extensive and frequent inspections of food products and water, but they have now revised their principles. Public health protection authorities are now performing much less inspection themselves. They concentrate on inspecting new workplaces, water works or food production lines when they are being taken into use for the first time. Later the enterprises are expected to run their own safety and product quality checks using accredited methods and laboratories. This leaves the health protection professionals the task of overseeing that all these duties are fulfilled.

44. The team encountered certain activities, which were held as high priorities by the respective SES organizations, because these activities generated money to the organizations through fees. This attitude is most understandable given the very limited resources the SES units must operate under. However, there need to be mechanisms in use through which the appropriateness of all SES activities – including services performed for fees – will be continuously monitored. Otherwise the SES, struggling under high pressures, might end up developing in distorted directions.

45. In the discussions on the inspection services offered by the SES, several references were made to informal (and thus illegal) fees collected by SES professionals. There is a reference to illegal proceedings in the governmental decree targeted at decreasing the number of inspections. The only way to elicit reliable information of the occurrence of the collection of illegal payments would be through population surveys. Without speculating any further about the size of the problem posed by these fees, it should be clearly understood that in health protection it is most detrimental if there is any possibility for an enterprise or organization to buy its way out of meeting the safety requirements.

46. The conclusions and proposals presented here point the way to a major reform agenda. The magnitude of changes needed surpasses what normal management can handle. Therefore the change process would need to be planned carefully and change agents would need to be employed. Also, outside expertise and training for the change process and change management would be necessary.

Summary table of the most important recommendations

The SES encompasses the segment of health protection of the whole field of public health. In order to modernize and make its operations efficient and also proportionate to the very limited resources available, the SES should

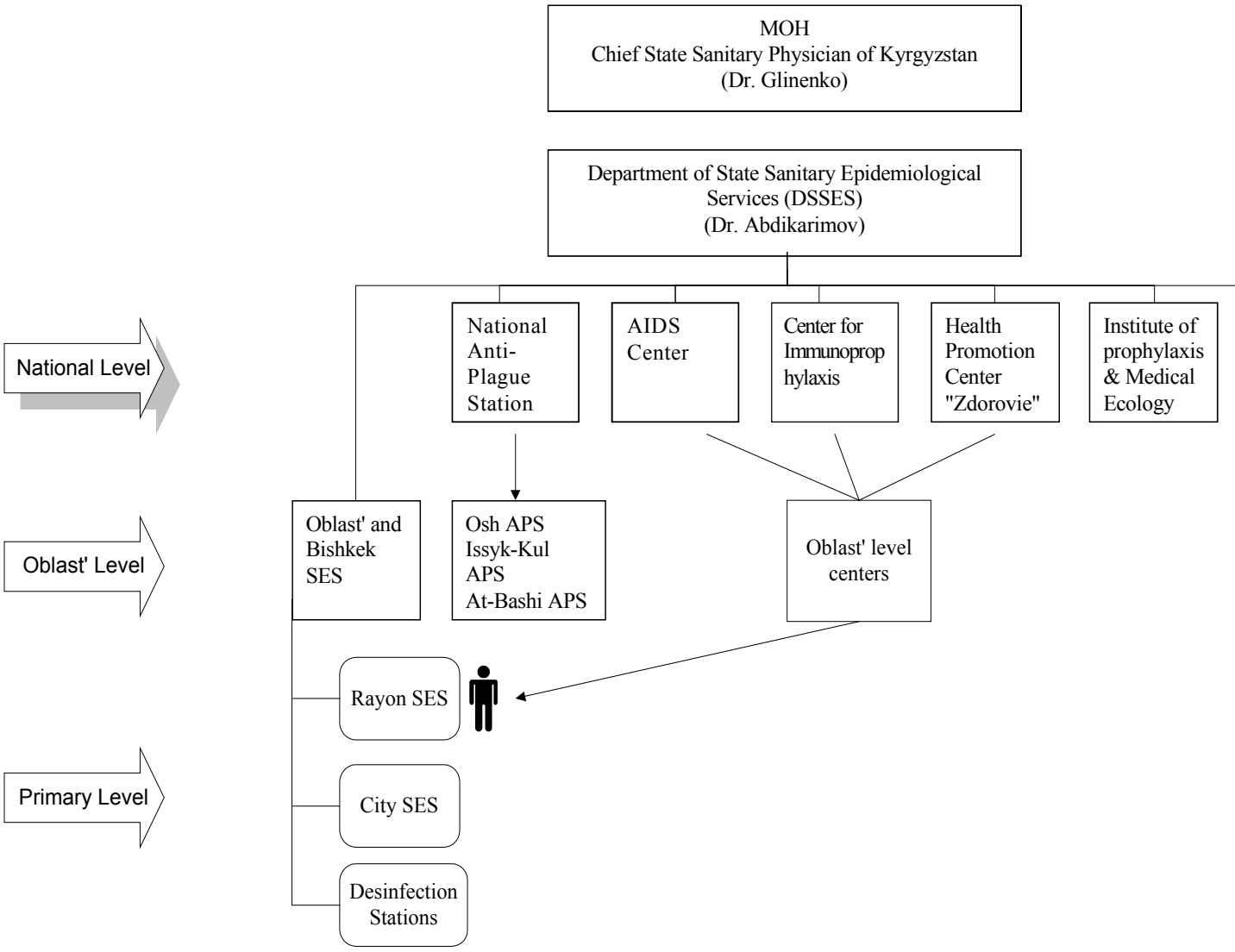
Strengthen and further develop its operations on the following:

- Extracting a comprehensive population level picture of the epidemiology – occurrence and determinants of occurrence – of the main infectious diseases in the population of the Kyrgyz Republic. This calls for learning new skills and adopting new practices.

- Strengthen clinical microbiology together with the clinical services to reach the optimum use of laboratory diagnostics for infectious diseases. This calls for internal rationalization of the laboratory services along the lines planned now for virology diagnostics. In the future, clinical microbiology should become part of the clinical services.
- Develop true partnerships with the clinical services instead of staying in the role of punitive controller. This calls for upgrading the epidemiological skills to be useful on the community and population levels.
- Ensure the successful implementation of such basic public health functions as immunization, iodine supplementation and hygiene education of the population. These are all examples of actions, where the health gains are unquestionably overwhelming in relation to the inputs needed.
- Focusing on the priority areas of food and water safety in sanitary hygiene; under the difficult circumstances, this will require innovative action: continuous testing and subsequent adoption of new approaches, co-operation with other authorities and stakeholders. This calls for shifting of resources and input from areas of lower priority to these tasks.
- In order to improve efficiency and adherence to effective health protection practices and strengthen focusing on the highest priorities, SES should
- Review all its main practices and discontinue or reduce the use of resources for practices which are not in line with the internationally known most effective practices. This calls for a major review of the work currently under the heading of epidemiology.
- Reduce the time spent on activities which should be considered as lower priorities, such as the current involvement in the daily work of the schools
- Reduce the number of staff, especially the staff working in supportive functions for epidemiology.
- Carry on rationalizing the network of sanitary hygiene laboratory services along the current general plans.

Annex 1

THE ORGANIZATIONAL STRUCTURE OF THE SES SYSTEM IN KYRGYZSTAN


MOH
Chief State Sanitary Physician of Kyrgyzstan
(Dr. Glinenko)
Department of State Sanitary Epidemiological Services (DSSES)
(Dr. Abdikarimov)
National Level
National Anti-Plague Station
AIDS Center
Center for Immunoprophylaxis
Health Promotion Center "Zdorovie"
Institute of prophylaxis & Medical Ecology
Oblast' Level
Oblast' and Bishkek SES
Osh APS
Issyk-Kul APS
At-Bashi APS
Oblast' level centers
Primary Level
Rayon SES
City SES
Desinfection Stations

EUR/01/5024168
ORIGINAL: ENGLISH
UNEDITED
E72561

In Kyrgyzstan, as in all former Soviet Union countries, a vertically organized sanitary epidemiological service (SES) is responsible for providing part of the services related to the health protection. Though SES acquired a relatively strong position during the existence of the Soviet Union, currently SES faces serious financial problems of trying to make ends meet with a low level of spending – about US $0.30 per capita in Kyrgyzstan at the end of the 1990s. Reforming the SES has lagged behind the development of other components of the health care system in the country. It became evident that, in spite of some plans to restructure the SES, the strategic vision of the reform still remained as a future challenge. Therefore, a review team was designated to include experts relevant to the three main functions of SES – epidemiology, sanitary hygiene and laboratory services. The review covered how the SES operates and how it is structured, assessment of the existing functions and structures and the recommendations on how to revise and restructure SES. The ultimate purpose was to make the SES even more effective and efficient, keeping in mind the scarcity of financial and other resources.

Contact addresses

Ministry of Health of Kyrgyzstan
Moskovskaya Str., 148
720405 Bishkek
Kyrgyzstan

Eastern Europe and Central Asia Department
Department for International Development (DFID)
20 Victoria Street
London SW1H 0NF
United Kingdom

USAID (Central Asia)
c/o United States Embassy
97A Furmanov St.
480091, Almaty
Kazakhstan

The World Bank
1818 H Street, NW
Washington, D.C. 20433
United States of America